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"FRUIT WORLD OF AUSTRALASIA."

Representing the Deciduous, Citrus and Dried Fruits Industry of Australasia.

Published the First of each Month.

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Proposed Arbitration Court Award.

Increased Wages Forecasted.

A provisional award has been made by His Honor Mr. Justice Powers, in the case, Australian Workers' Union versus sundry fruitgrowers.

The provisional award proposed sundry increases in wages, averaging about 7/- per week.

The matter is as yet incomplete, as both sides have been given till September 3rd to criticise the proposed award, and to submit in writing any proposed amendments or to point out inconsistencies.

The fruitgrowers' representatives will doubtless insist that no award is justified at the present difficult stage in the industry, whilst on the other hand the workers' representatives will press for higher wages than are forecasted.

Probably His Honor will strike an average half-way, and may confirm the present proposed award.

. . . . . .

It is an astonishing anomaly that whereas wages and the cost of living are being reduced in other parts of the world, both are steadily rising in Australia.

Yet Australia is a land of primary production, and depends for its wealth on the returns received from the export of primary produce.—such produce having to meet the competition of the rest of the world, and receiving in consequence the world's parity.

. . . . . .

There is urgent need for fruitgrowers to organise economically and politically. The Federal Parliament would be strengthened if it contained men well versed in the fruit industry —its problems and potentialities— and having at heart its uplift and development.

BROWNHEART IN APPLES.

Due to Suffocation.

The British Food Investigation (Department of Scientific and Industrial Research) has issued a report by Drs. Ridd and C. West, re Brownheart in Apples.

In connection with three damaged cargoes in 1922, it is stated that the evidence indicates that it was brought about by an excess of carbon dioxide, due to insufficient ventilation.

. . . . . .

"Brown heart" was most apparent when insurance companies gave an "all risks" insurance in 1922. This class of insurance was not renewed in the 1923 shipping seasons, and complaints re Brownheart were nil.

FRUIT AND SUGAR.

The Sugar Embargo has a Strangle Hold on the Fruit Industry.

In view of the decision of the Federal Cabinet not to grant another pool for the coming season, it is certainly reasonable to expect that some relief should be granted as regards the sugar position.

For several years the fruitgrowing and canning industries have suffered severely because of the preferential treatment meted out to the favored sugar interests.

All the distorted statistics in the world cannot alter the plain fact.

Sugar is now materially dearer in the Commonwealth than if same were imported paying the duty of £9/6/8.

With an annual consumption of 50,000 tons of sugar by housewives and factories for jam making and fruit preserves, and with a handicap of £10 per ton (apart from the duty) there is a burden of £500,000 per annum being borne by the fruit industry, because of the inequitable sugar position.

As the world's price for sugar drops, the disparity is proportionately greater.

There is no need to construe these words into anything detrimental to the sugar industry. Nevertheless the subject has come prominently into politics, and the organised sugar interests, with their powerful political "pull" have managed to drive their hard bargains at the expense of other Australian industries, particularly the industry connected with fruitgrowing and preserving.

THE LEWIS BLACK WALNUT.

The Lewis Black Walnut, discovered and named (after Professor C. I. Lewis) by H. R. Mosnat, Chicago, is attracting much attention by reason of full description in the May issue of the "American Nut Journal," Rochester, N.Y. This black Walnut has been pronounced of superior quality by Dr. Robert T. Morris, Dr. William C. Deming, and other nut experts. The kernel is of high grade, cracks out in perfect halves, and in flavour combines the quality of the Persian Walnut and the common black Walnut in that it is less starchy than the former, and offers less pronounced flavour than the latter. It will grow where there is the largest amount of suitable land, and near the largest centres of population. The black Walnut is native to nearly every State in the Union.

Mr. Mosnat is the discoverer of a fine Walnut of curly grain wood, and of the Morris black Walnut for confectionery use.

Marketing Citrus and Other Fruits

American and Australian Methods Compared.

Statement by Mr. J. S. Vagg, Griffith, N.S.W.

As such keen interest is now displayed in regard to methods for selling citrus (and other) fruits, the "Fruit World" put a series of questions to Australians who have recently visited U.S.A. Last month we published the experiences of Mr. S. Stott and Mr. W. J. Foster.

We now publish our questions and the answers kindly furnished by Mr. J. S. Vagg, the capable representative of the Griffith (N.S.W.) Producers' Co-operative Co. Ltd.

Question 1. In what vital respect, if any, does the purchase of fruit, say by a San Francisco shopkeeper, differ from the method of purchasing fruit by a Sydney or Melbourne fruiterer from the agents?

Answer. The methods of selling fruit in San Francisco or any other Californian city differ very little from methods in vogue in Sydney, except that there the agents working on a commission basis, generally speaking, have not the same standing that our leading commission agents have, a large proportion of the business being held by firms who purchase the fruit from the growers and then resell to the shopkeepers.

You will understand that the Californian city markets have very little influence on the prices realised for the Californian products, the great bulk of the fruit having to go to markets in the distant Eastern centres, also, the cause of their proximity to the producing centres, they are largely supplied by growers who are not in the co-operative organisations.

Question 2. What rate of commission is paid to the market agent, and what service is involved therein?

Answer. The rate of commission charged by agents is from 7½ per

Question 3. In what special way does the citrus exchange representative co-operate with the wholesale and retail fruit dealer.

Answer. In answering this question, I will speak as of the eastern U.S.A. markets, and not of any Californian Centre. The Californian Fruit Growers' Exchange, which is the organisation controlling the citrus, deals very little with commission agents, the bulk of their fruit being sold f.o.r. packing house. Any fruit not sold in this manner is usually sent to the auction markets of the east. In this connection it is generally recognised that for high quality fruit the auction markets return the highest prices. The Exchange deals largely through brokers, or "Jobbers" as they are called over there. These Jobbers work on a 2½ per cent. commission. They do not handle the fruit, but merely place the business on behalf of perhaps several merchants or retailers who are unable to buy car load lots individually.

In centres where the Exchange has a representative, retailers may book orders with him and as soon as these orders reach car load proportions, he has the fruit sent to himself for distribution amongst the buyers. This necessity for shipping fruit in car load lots—due to excessive freights for small parcels—tends to concentrate the Exchange business into the hands of big buyers. Only a very small proportion of the crop is sold direct to retailers.

Whilst in Vancouver, B.C., I found that there the fruit distributors or merchants purchase right out from growers, and, in the case of citrus, none of them had a sufficiently large business to purchase car load lots of Californian Oranges, with the result that the broker came in between and, by collecting orders from several merchants, was then able to purchase a car load.

Question 4. Are Apples, Pears, etc., sold by the pound in retail shops in American cities (as in Melbourne) or by the dozen (as in Sydney and Hobart)?

Answer. Apples, Pears, Oranges, and such like fruit are sold by the dozen, whilst Grapes, Cherries, Plums and Apricots are sold by the pound, practically the same as in Sydney.

Two Big Organisations.

The Californian Fruit Growers' Exchange is the Citrus organisation, while the Californian Fruit Exchange is an organisation dealing solely in summer fruits, the latter's membership being made up of smaller district co-operative companies or organisations. This latter concern does not actually sell fruit, but in the case of the citrus organisation all sales are made by the Exchange, whose head office is in Los Angeles.

The System Reviewed.

Reviewing the system of selling, it works out something like this:—

There are 31 shipping points in the U.S., that is, points where fruit is sold in car load lots. From these points the fruit is distributed in smaller quantities to the towns within a radius which varies according to the geographical location.

A broker or merchant at any shipping point requires a car load of Oranges of a particular size or sizes, and perhaps from a particular packing house or district. He places the order with the local representative of the Exchange (the Exchange has agents in all the centres of importance—that is, centres where car loads of fruit are bought) and every night these orders are transmitted to Los Angeles by night telegram, and next morning are distributed to the different District Exchanges by the Los Angeles office.

The District Exchange then passes the order on to the packing house named by the buyer, or if he has not named any particular pack, the orders are distributed equitably between the member associations.

In the same way, when the returns for the fruit are forwarded, they go to the Exchange which, after making deductions which are fixed at a flat rate per box each year, credit the balance to the District Exchange, which in turn credits the association which supplied the fruit.

Each association's fruit is sold separately, there being no pooling as between associations, but most of the associations pool their individual grower members' fruit after it has been graded in the packing house. The system of pooling varies considerably in the duration of the pool period.

The whole control of the fruit and the price at which it sells is retained by the Exchange. This is so even in the auction markets because, if one of these is over-supplied they hold off, or divert supplies which may have been intended for that particular centre.

You will thus see that the system differs very much from ours. Australian prices are as a rule satisfactory on a normal market, but when the market is over-supplied there appears to be a tendency to stampede and cut prices in order to clear their consignments. Such a state of things never occurs with the Californian Citrus.

Assisting the Retailer.

The Californian Fruit Growers' Exchange for many years did not recognise the retailer, but some years ago they established a Retail Service Department whose main business was to promote retail sales of Oranges by assisting the shopkeepers in advertising and sales propaganda generally. That Department has also been the means of standardising to a large extent the retail price of Oranges and Lemons. By the distribution to the retailer of charts which show landed costs also the counts per box and the price at which to sell retail, the Exchange has practically standardised the rate of profit on Oranges and Lemons at 33 1-3rd per cent. on landed cost, or 25 per cent. of the selling price.

Application to Australian Conditions.

In my opinion Australian Citrus Associations should endeavour to standardise the selling price of fruit.

The selling side of the business should be a specialised trade in itself, but I do not think that it ever will be until it is controlled by the Growers organisation.

The great thing needed here is the extension of sales by advertising and propaganda which will lead to a greater consumption of fruit.

This work is not being done, and I do not think it ever will be, except by a body controlled by the growers themselves.

IN LIGHTER VEIN.

"There's many a true word spoken in jest."

Mr. Abimelech Snorkins gives his friend, Mr. Tadpole, his views on current events

MR. TADPOLE was a fruitgrower; consequently he had a good growl now and then. He reckoned that the fruitgrower who couldn't put up a good argument against things in general, and say that "something ought to be done about it" was not worthy of the profession.

He was prosperous enough in his quiet way. Managed to get "three meals a day and a smoke now and then," was his laconic summary.

Mrs. Tadpole was an ample body and an excellent housewife, and as for the rest of the family, we'll hear more of them as our story develops. But don't forget there was a charming daughter. Aha! the plot thickens.

Whilst overhauling his spray pump ready for spring spraying with Bordeaux, Tadpole was greeted by a neighbor.

"'Day, Mr. Tadpole."

"Good day, Bim," responded Tadpole heartily. "What's the latest?"

The newcomer was Mr. Abimelech Snorkins, commonly known as Bim. He possessed an abundant ziff.

" What's this argument about the Fruit Pool?" asked Mr. Abimelech Snorkins.

"Latest, eh! Y-oughter see my missus, she's got the latest in boots anyhow."

"Yes, and what's that?"

"Feet."

Abimelech dodged the piece of oily cotton waste which was thrown at him.

"But, I say," continued Bim. "What's all this 'ere argyment about the fruit pool? The Gov'ment says nothin' doin', eh? But instead they'll give the growers a soapsud——"

"Subsidy, Bim."

"That's what I said, a soapsudy. Dang the Gov'ment, says I. I've been growing fruit for over 30 year, and never asked the Gov'ment for anythin' (except £5 every time the missus brings a new blessin' into the family. I bought a cream separator with the last baby bonus.) But I don't mind lookin' after my own childer, it's me proud dooty; but I object to three unwanted bawlin' infants being foisted on us: Gov'ment kids, a tripod of 'em."

"Triplets, eh?"

"Yes, somebody's tripped, all right. There's the High Tariff, that's one; and the Arbitration Court, that's two; and one that bawls the loudest, that's the Sugar Agreements. An' now—"

"What, another, Bim?"

"Yes, that makes a quadruped: this one's name is 'Gov'ment Plantings.'"

"Six to four on?"

"Eh? No fear! the odds are a thousand to one against. The Gov'ments been plantin' and plantin', and they're goin' on plantin.' They've cruel'd the pitch both for the blokes as was already in the business as well as for the pore new blighters as has taken up Gov'ment lands."

"You're pippy to-day, Bim; it's Monday, washing day, and you've swallowed the wife's blue-bag," and Tadpole gave Mr. Snorkins a terrific dig in the ribs.

"I say, Bim," continued Mr. Tadpole, "have you been readin' the papers lately?"

"Well, I allers reads the 'Fruit World."

"Oh, then, your education is complete; well, then, what do you think of this new marketing scheme in Queensland?"

Snorkins thought for a few moments before replying.

"'Every man to his own job,' says I." he answered, slowly. "Let the shoemaker stick to his last. I don't know enough of their plans to criticise 'em, anyhow, I expec' the growers is tryin' to do their best to improve things."

"Yes, Bim."

"But, all the same, I carn't see why they runs to the Gov'ment. It beats me, Mr. Tadpole; yus, it beats me. In the first place there's a Council of Agriculture what's supposed to be run by the perdoocers, but whose money is runnin' it? The Gov'ment's. So. tain't their own Council arter all. Then they sends men for a hurried trip, and they writes a report."

"Did you read it, Bim?"

"I did, Mr. Tadpole, every line; some things was true, but other things was terrible skewwif. But the growers adopted the scheme, and they're going to run it—with Gov'ment money. I wish 'em success, 'cause I'm a grower meself, but it beats me. Mr. Tadpole,. Yus it beats me pink."

"Or blue? Have a cigar, Bim."

"Im obleeged to 'e. Now, speakin' of marketing fruit, Mr. Tadpole, there's lots of new schemes I've heard of in my day, but I allers asks meself the question, 'Is this way any more effective or cheaper than the present method? And is it going to benefit the grower? or the general public?' Some high speakin' folks has come out with ideas, for this an' that, an' when they've finished it makes yer sit down and think what a fool y're not to have thought of it years before. In goes yer money, and when the show is wound up a few years later it makes yer jest wonder where the fault was."

"And where is the fault generally, Bim?"

"Well, gen'lly," replied Abimelech reflectively, "they goes to knock out one form of agency or selling, and put up another, and the new one allers costs more than the old."

"You're a hard-shelled individualist."

"Wrong, Mr. Tadpole, quite wrong, an' you knows it. I believe in organisation every time. I'm not much good at addressin' meetins'; I leaves that to the newcomers, 'cause I find the less a man knows about a subject the more he has to say about it. But I've often given me ideas to you an' others. Let's organize as a district, concentrate on growin' the right varieties and grow 'em well; and then pack and grade in a top notch fashion. That's our first job as growers—to tackle our end of the work before spoutin' about the big things we're goin' to do with another man's bis'ness, about which we know nothin'."

A runaway pig dashed between the legs of Mr. Snorkins.

It's hard to say how long the conversation would have continued along these lines, for just at that moment a runaway pig dashed between the legs of Mr. Abimelech Snorkins, bringing that gentleman to earth in a most effective fashion.

[Next month we'll hear more of these stirring adventures.]

Fruitgrowing Under Irrigation

Ploughing : Cultivation : Seasonable Orchard Notes : Citrus Culture.

(By Our Special Correspondent.)

THE harvesting of the **Washington Navel Orange crop** is drawing to a close; the crop has only been a light one, but prices on the whole have proved remunerative, being much in advance of those received last season.

The cabled reports of the first shipments of Oranges to England have been pleasing, growers should nett fair returns for the fruit.

The **pruning of citrus trees** should be carried out as early as possible, all old spent and dying shoots should be cleaned out. The small dead shoots in the trees, if left, are the cause of much damage to the fruit, owing to the tender skin of the fruit being scarred by the dead laterals as it sways with the wind.

All crossing shoots should be removed, limbs brushing the ground should be cut away, so that the foliage is about 18 inches to 2 feet above the soil level. The growing fruit, as it increases in weight, will tend to bring the limbs down to the ground by next season. Dense trees should be thinned out to allow air and light through the tree, care being taken with Orange trees that large openings are not made in the foliage admitting direct sunlight on the bark of the tree. Orange bark is tender and liable to sun-scald, consequently the pruner should aim at keeping a good canopy of leaves over the whole of the tree.

Lemon trees may be pruned with open centres to allow free entrance of light, the Lemon bark is not so liable to sun-scald as the Orange. Lemon trees with open centres, fruit along the inside as well as the outside of the branches.

Mandarin trees should be thinned out, the ends of the fruiting shoots are continually sub-dividing, and if left unthinned tend to outgrow their vigour. By reducing some of the subdivisions those retained are strengthened and continue to produce profitable crops. The Mandarin tree should not be opened out too much, but should be treated on similar lines to the Orange.

When old citrus trees are cut back in order to renovate them or younger trees are reduced back to force out new growth to bud over, the stems and limbs should be well covered with a thick whitewash, or straw may be tied loosely around the tree. This provides protection for the bark against the hot summer sun.

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Ploughing and Cultivation.

No efforts should be spared to have all ploughing in the Mid-Murray Valley completed by the middle of September. The grand rains that have fallen throughout the winter months have kept the soil in fine fettle, but much of the beneficial results will be lost if ploughing is delayed.

The ploughing of the land will tend to conserve the moisture and thus delay the irrigations or at the most the first irrigation will only need to be light. Soil left unploughed until October will lose much moisture through surface evaporation, as the surface soil has become more or less beaten down. Under such conditions the loss of soil moisture by capillary attraction is very rapid during warm weather. The loss of moisture is also rapid from weed growth, and this has been abundant this winter, consequently if this undergrowth is not turned under as early as possible, the vines and trees are the losers.

Late ploughing usually means that the soil becomes hard and turns up in large cakes. These lumps become sun baked, and are difficult to bring down into a fine tilth. Lumpy soil is always inclined to be dry, owing to the large air spaces formed by the lumps not fitting closely together.

Ploughing that is left late is more costly and laborious than the early ploughing. Where land has to be ploughed late, each days ploughing should be harrowed each evening to prevent the lumpy soil baking, and to assist as far as possible in bringing the soil into a fine tilth. This practice will tend to reduce the loss of soil moisture to a minimum by destroying the capillary tubes near the surface of the soil, and by breaking down the lumpy soil, thus reducing the air pockets.

The **harrows** and **scarifiers** should be kept busy in the spring and summer months, constant cultivation means the conserving of the maximum of soil moisture through the summer months. This is an essential practice, and when carried out successfully, the maximum of fruit can be produced with less water than where indifferent cultivation is carried on.

Where the land was fairly grassy or cover crops were ploughed under the first cultivation should be carried out with the disc harrows. This implement will cut up the green manure. whereas the set scarifiers will tend to draw the green stuff to the surface again, the scarifiers will also cause great inconvenience through constantly choking.

As repeatedly advised, the irrigationist's motto should be, "The maximum of cultivation with the minimum of irrigation."

Seepage which is the "bug-bear" of the irrigation colonies is often brought on by excessive watering, which often follows faulty cultivation. The grower sees his plantations showing signs of distress owing to the lack of moisture prior to the irrigation, the consequent result is the heavy pouring on of water. The headlands and top ends of the rows become water logged, the excess water drains through the soil, dissolving the injurious soluble salts, until a sharp rise in the clay sub-layers is reached. The drainage is held up, in as it were an underground lake or basin, the only means of escape being by surface evaporation. The highly salt charged water in vapourising leaves the injurious soils in the surface layers with detrimental results to the plants.

Underdrainage is the only remedy for salty land, to properly carry out a system of underground drainage, soil surveys of both surface and the clay sub-soil should be made.

With properly prepared contour maps one can so lay out the system of drains at correct depths with the minimum of expense to gain the maximum of service.

Subsoil readings should be taken about every 20 feet on the square, they can be taken at greater distances, but the nearer they are the more accurate will be the map. The clay rises very abruptly in places. consequently where the readings are far apart, the rises and falls in the clay may not be found, which may lead to a faulty lay out of the drains.

When the soil is properly underdrained, the irrigations may be heavy in order to dissolve the soluble salts, which will be carried away in the excess water through the drains.

THE CANADIAN FRUIT INDUSTRY.

Canada possesses important fruit-producing areas in Nova Scotia, Ontario, Quebec, New Brunswick, Manitoba, Southern Alberta, and British Columbia, Apples being the predominating fruit. Canadian Apples have a high reputation on the English market, to which the bulk of the exports are sent. The Dominion, however, has a large number of fruit and vegetable canneries and Apple evaporators, which deal with a goodly proportion of the produce.

The total export of fresh Apples from the Dominion of Canada for the year ended March, 1923, totalled 1,460,656 barrels, valued at £1,290,409, as compared with 1,845,955 barrels, valued at £1.770,860 for the previous fiscal year. The United Kingdom received by far the bulk of the shipments.

South Africa.

Remarkable progress has also characterized the South African fruit industry during the last few years. The principal fruits exported are Peaches, Pears, Plums, Apricots, Nectarines, Oranges, Pineapples, Melons and Grapes. Last year the total value of fresh fruit (including nuts) shipped from the Union was £520,997, as compared with £411,431 in 1921.

The Grafting of Fruit Trees and Vines.

Seasonable Operations in the Orchard and Vineyard.

Strap and Cleft Grafting.

IN orchards which have been unwisely planted, a good deal of grafting is inevitable at this time of the year, and the earlier this work is taken in hand, the quicker the trees will come into bearing, with profitable varieties.

There are many kinds of grafts in use, but for deciduous trees—and particularly Apples—there is none which has more to recommend it than the strap graft, which has the advantage of a double grip on the tree and is less likely to blow out in the early Summer, as so often happens with the ordinary wedge grafts.

An additional advantage in favor of strap grafting is that the limb of the tree will more rapidly grow over, and in fact in a few years, it is often difficult to see where the graft has been inserted. The illustrations shown on this page clearly demonstrate the methods in vogue.

Illustration No. 1 is practically self-explanatory; it shows the graft of the prepared scion ready for the work of strap grafting; the length of the strap, of course, must be in accordance with the diameter of the limb or tree to be grafted. If young trees are being worked, the strap needs to be much smaller than illustrated.

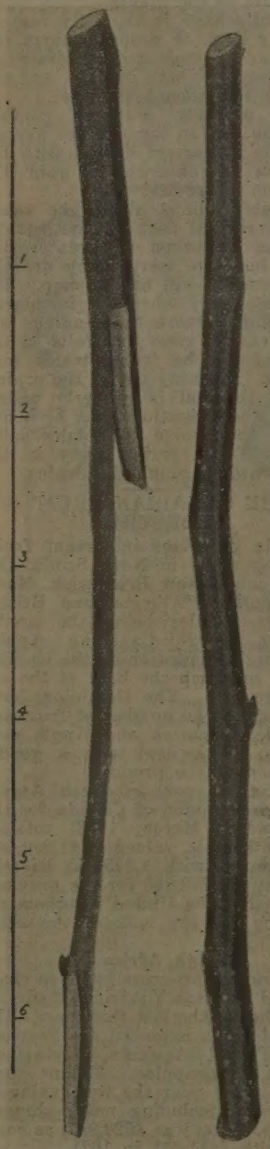

Fig. 1. Scions ready for strap-grafting.

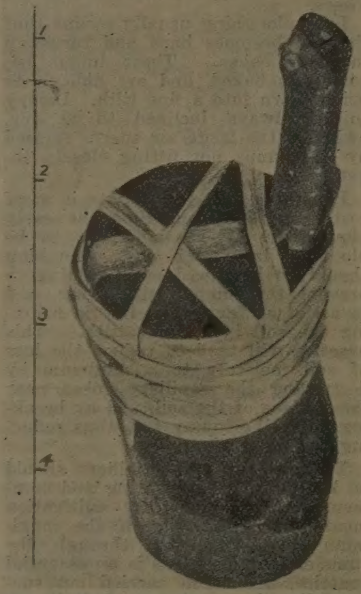

Fig. 2. Strap-grafting; scions tied and ready for claying.

Illustration Nos. 2 and 3 show the scions in place and ready for the clay or wax, as the case may be.

Illustration No. 4 shows the strap-grafted tree after twelve months' grafting. This demonstrates the complete union of the scions with the stock.

Vines.—There is not much variation in the grafting of old vines, but for those who have this work to do in renewing old vineyards, we illustrate the method which is chiefly in use.

Illustration No. 5 shows the Grape vine scion prepared for cleft grafting. No. 6 shows the vine cut back ready for grafting, and No. 7 shows the vines grafted with the scions in position.

* * *

Some Practical Hints.

Our Tasmanian correspondent, writing on this subject, gives the following interesting information:—

Grafting.—This may be carried out as soon as the first sap movement is evident, and the buds commence to swell. When re-working old trees do not de-head too severely. Very little fruit is produced in the lower portions of the tree, and better results are obtained by inserting six or seven scions well up in the main branches. If the operation is carried out by

Fig. 3. Strap-grafting; the scion in place before being tied.

Fig. 4. Strap-grafting. Tree twelve months after grafting, showing the union of the scions with the stock.

working over half of the main limbs one season, and the other half are left unshortened and grafted the next, there will be less chance of die back and loss of trees.

A good grafting wax may be made up as follows:—Resin, 3 lbs.; beeswax, 3 lbs.; tallow, 2 lbs. Melt together and work until smooth. This can be applied by hand, keeping the hands greased to prevent sticking.

U.S.A. APPLE CROP FORECAST.

The total Apple crop of the United States, as reported by the Federal Department of Agriculture, on June 1, 1923, shows a decrease from last year. The commercial Apple crop, however, shows an increase over 1922. The June 1 condition of the commercial Apple crop of the United States indicates a commercial production of 32,284,000 barrels, as compared with 30,955,000 barrels last year. The commercial Apple crop forecast in the western states shows Idaho, Oregon, Washington and California all with larger Apple crops than last year. New York State is a trifle less than last year, while the other two large producing States—Pennsylvania and Virginia—are each a trifle over last year, according to the June 1 forecast.

Following are the Federal Government figures for Idaho, California, Oregon and Washington for this year and last in barrels. These are figured as the equivalent of three 1-bushel boxes to the barrel:—

	Barrels. 1923	Barrels. 1922
Idaho	1,307,000	975,000
Oregon	1,619,000	1,260,000
California	1,383,000	1,200,000
Washington ..	7,997,000	7,104,000

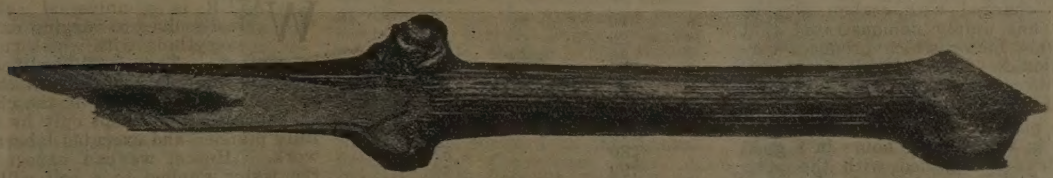

Fig. 5. A grape-vine scion prepared for cleft grafting.

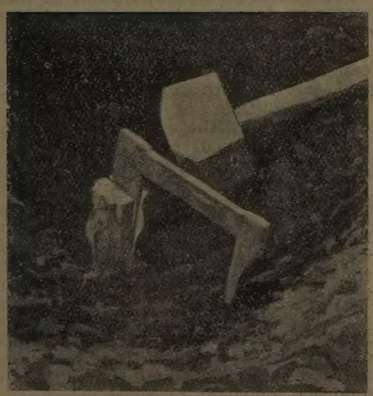

Fig. 6. Vine after being cut off, ready to receive the scion.

Fig. 7. A grape vine with grafts in position.

The stock is actually in a hole made by throwing back the earth. When filled in again the soil reaches to the top bud of the scions.

The illustrations on this and preceding page are taken from the Bulletin by Mr. W. J. Allen, Fruit Expert, N.S.W. Department of Agriculture.

U.S.A. CANNED FRUIT PACK.

It is reported that there is a considerable tonnage of canned fruit from the 1922 pack unsold. Investigation shows, however, that this proportion is no greater than normally, and should be handled very nicely before the new tonnage reaches the market. Foreign business on canned fruit this year was relatively light. It is believed that there will be a very good demand for the 1923 canned pack and at very fair prices.

OBITUARY.

We regret having to record the death of Mr. S. H. Moody, which occurred suddenly at Kew (Vic.) on August 23rd. Mr. Moody was at the time Secretary of the Victorian State Fruit Advisory Board. He was by training and experience a journalist, and he had fulfilled several important secretarial positions with considerable credit.

Effects of Irrigation Water on Fertility.

By J. E. Greaves. Chemist and Bacteriologist Utah Experiment Station, U.S.A.

Over a period of years a series of tests and experiments dealing with irrigation waters and their application to the soil have been conducted at the Utah Experiment Station. Discoveries and results from that work have value to every orchardist who employs irrigation on his acreage. Some of the more important lessons are embraced in this article prepared by Professor Greaves, which will be found of great interest to our readers in Australia and New Zealand.

WATER is applied to the soil to meet the needs of the growing crop. But what influence has it upon the fertility? Does it increase the soluble plant food within the soil, leaving it there for the use of the growing plant or does it drain from the soil the nitrogen, potassium, or phosphorus, thus leaving the soil poorer in potential fertility? Is it increasing or decreasing the activity of the farmer's invisible friends, the bacteria? Does it carry with it and deposit within the soil injurious alkali salts which in time will render the soil sterile, or does it increase the total quantity of plant food in the soil thus making it more fertile?

The answer which we give to these questions will be governed by the nature of the soil, the composition of the irrigation water and the knowledge of the individual applying it.

The application of irrigation water to a soil may change the chemical, physical, or biological nature of a soil so that the food available to the growing plant is materially increased or decreased. Although pure water is a universal solvent, yet its action is materially increased when it becomes charged with carbon dioxide. Work has amply demonstrated that the main factor which produces carbon dioxide—the bacteria of the soil — is directly influenced by the quantity of water applied to a soil.

The quantity of carbon dioxide produced in twenty-four hours in a good aerable soil supplied with the optimum amount of moisture is enormous. Some results indicate that this at times may be as much as 67 pounds per acre to a depth of 16 inches produced daily. This comes in contact with the insoluble potassium and phosphorus of the soil and renders it available to the growing plant, as is seen from increased yield which is obtained. One investigator found that soil constantly supplied with carbon dioxide through a pipe buried in the ground gave an increased yield of 12.2 per cent. over crops grown on adjoining untreated soil.

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Function of Bacteria.—All plants except the legumes—beans, peas. vetches, etc.—get their nitrogen directly from the soil. This comes from the plant residues in the soil or from the applied fertiliser. All soil and fertiliser nitrogen except nitrates must be rendered available for the growing plant by bacteria. They transform the protein nitrogen into ammonia, but there are few plants which can use this. Other groups of bacteria transform the ammonia into nitrates in which form it is available to the higher plant. The speed with which these transformations occur is governed by the quantity of water in the soil.

If we consider the quantity of water which a soil will hold when it is just saturated as 100, then the quantity of ammonia produced at the various moisture contents becomes as follows:—

Per Cent. Water in Soil. %	Ammonia produced. %
10	2
20	8
30	32
40	68
50	85
60	100
70	78
80	57
90	49
100	45

Hence, when we have soil with 60 per cent. of its air space filled with water and the other 40 per cent. with air, we have a maximum transformation of the nitrogen of plant residues over into ammonia. When the water applied is below or above this quantity, the transformation is not as rapid. It is interesting to note that excessive quantities of water are more detrimental than a small quantity.

But how about the speed with which the ammonia is transferred into available nitrates? Is this dependent upon the water supply? This is answered by the result given below:

Per Cent Water in Soil. %	Per Cent Nitrates. Formed. %
10	11
20	17
30	31
40	62
50	85
60	100
70	40
80	9
90	None

Here again the greatest activity occurs when the soil has 60 per cent. of its air space filled with water but when it becomes much greater nitrification rapidly decreases and eventually ceases, and it is interesting to note that numerous experiments have demonstrated that this is the water content which produces maximum crops.

This is due to the fact that at this water content the nitrogen of the soil is being rapidly rendered available for the growing plant. Moreover, the resulting acids, as by-products of bacteria, are rapidly formed and these come into contact with the soil phosphorus and potassium and render them available to the plant. Hence we must ask ourselves the question: Are we applying too little or too much water to our soil to maintain sixty per cent. of the air space filled with water?

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II.

How Much Plant Food is Irrigation Water Carrying from Your Soil?

WATER is a universal solvent. It dissolves to varying extents everything with which it comes in contact. This is exemplified by the fact that pure water is a chemical curiosity found only in the chemical laboratory and kept only by carefully planned and executed laboratory work. Hence, we can expect that the water applied to a soil will dissolve more or less of its constituents, depending upon the nature of the soil and the water applied.

If only sufficient water is added to the soil to moisten or even saturate it, the subsequent evaporation of the water re-deposits the constituents in the soil and nothing is lost .But when more water is added than the soil can hold it passes through the soil and carries with it the plant food. The magnitude of this factor is exemplified by the enormous quantities of the various salts found in the waters of some lakes and the oceans. These owe their origin to the water seeping through the soil becoming laden with salts which are carried to the lakes and ocean. When the water evaporates the salt remains, thus ever becoming more concentrated.

It is estimated that the rivers of North America carry to the ocean each year 474,000,000 tons of soluble constituents, which would be a quantity sufficient to cover one hundred acres to the depth of nearly three thousand feet. Although the greater part of this is common salt and other non-valuable agricultural

compounds, yet there is an appreciable quantity of soil fertility carried in these waters as is witnessed by the 33.4 pounds of potassium, the 3.46 pounds of phosphorus, and the 22.8 pounds of nitrogen which as an average was found in two acre-feet of water from the stream of an intermountain region.

Carefully controlled experiments have been conducted at the Rothamsted Experimental Station in England where the yearly rainfall is about 30 inches and the annual loss of nitrogen was found to be 35.5 pounds per acre. The work of the Utah Experiment Station, covering a period of ten years, indicates that large quantities of nitrogen are lost in the drainage water when excessive quantities 25 inches and over, of irrigation water are applied to a soil during this season.

This loss of nitrogen results in a decreased yield, for the nitrogen is removed by the water as fast as rendered available in place of being taken up by the growing plant and built into valuable plant constituents. Moreover, for this same reason, the grain which is grown on such soil is lower in protein. Undoubtedly the great merits of the dry-farm wheat as a bread-maker are due in a large measure to the fact that the scanty rainfall is not sufficient to remove the soluble nitrogen from roots of the growing plants. There is still another factor. Excessive quantities of water rapidly deplete a soil of its fertility, which, viewed from the economic standpoint, is no trifle for the thirty-five pounds of nitrogen removed by the drain waters from the Rothamsted Station would cost, at 1/3 a pound, £2/3/9 per acre annually.

The first remedy then, in those districts where irrigation is practised, is that the quantitv of water applied be such that the drain water is at a minimum on the majority of soil. Most soils produce better crops with 16 inches of water than with more. Furthermore, small frequent applications are not nearly as likely to remove soil fertility as is the same amount of water applied in large quantities.

Where the rainfall is such that there may be a loss of plant food the only practical method of reducing this loss is by the use of growing plants, the roots of which may absorb the plant-food about as rapidly as it is made available. If required, these may be returned to the soil when the plant food will be rendered available as needed by the next growing crop. The use of rye, rape, or other green manures, seeded in the autumn and plowed under the next spring on land that would otherwise be bare during autumn, winter and early spring, will not only conserve plant food that would otherwise be lost but it will greatly increase the organic matter of the soil, and this usually improves its physical, chemical, and biological properties.—"Better Fruit."

TASMANIA.

Advisory Board Meeting: Interstate and Oversea Fruit Trade: Seasonable Orchard Notes: Berry Fruit Culture

THE coming season promises to be an early one. All fruits are very forward, indications pointing to a heavy blossoming. Pruning is practically completed, and orchardists are applying late dormant sprays for scale, aphids, etc.

A number of growers are taking the initial steps in eliminating unproductive or unsuitable fruit varieties from their orchards. These will be reworked with more profitable kinds. The Apples which are most favored are the late colored keeping sorts, such as Tasma and Crofton, whilst amongst Pear varieties, Packham's Triumph, Josephine de Malines and Winter Cole are the popular choice.

State Fruit Advisory Board.—The first meeting of the newly-elected Board was held in Hobart on July 31st.

Mr. A. Davies was again elected chairman, and the Fruit Expert Mr. P. H. Thomas, Secretary. The following are the representatives chosen as delegates on the Australian Fruit Council: — Sir H. Jones (Canned Fruits; J. P. Piggott, M.H.A., N. Campbell, M.H.A. (Fresh Fruits); V. Skinner (Dried Fruits).

Brisbane Freights.—This matter was brought forward at the Annual Fruitgrowers' Conference. Mr. J. Piggott moved, Mr. B. Pearsall seconded:

"That the Executive approach the respective shipping companies with a view to obtaining a reduction on present freights ruling, as it is considered that such militated against the development of the trade to Brisbane. Carried.

Overseas Freights.

Mr. T. J. Eddington moved, and Mr. N. Campbell seconded:

"That the State representatives on the Australian Fruit Council strongly put forward the case of the fruit industry in respect to a further reduction of overseas freights, and that a deputation approach the Overseas Shipping Committee and Commonwealth Line with a view to bringing this into effect." Carried.

Consolidated Charges on Overseas Fruit Exports.—The following resolution was carried at the Fruitgrowers' Conferences:

"That the State Advisory Board be requested to get into touch with the National Federation of Fruit Agents, and request that consolidated charges imposed on Tasmanian fruit be closely investigated with a view to reducing these to a minimum that will cover the necessary services." Carried.

Direct Overseas Shipments.—Mr. Campbell addressed the meeting in regard to a betterment of conditions in respect to the despatch of fruit cargoes to overseas markets.

Mr. N. Campbell moved, Mr. V. Skinner seconded:

"That representation be made to the Shipping Agents that fruit cargoes exported overseas for the coming year be more equitably distributed over the season, and that effort be made to obtain such vessels that will give a direct service."

Pool for Soft Fruits.—Mr. Piggott outlined to the meeting the discussions that had taken place in regard to the processing of this coming season's canning fruits at the recent meeting with the Hon. Minister of Customs. Decided:

"That this Board request the Federal Government to form a pool for soft fruits on the conditions as were operative last season, and under the same regulations." Carried.

Sugar for Jams and Preserves.—It was decided "that this Board considers that it is a matter of great urgency that the Federal Government investigate the question of the cost of sugar used in the processing of jams and preserves for export, as the manufacturer is now paying several pounds sterling per ton more than the world's parity." Carried.

Fruit Statistics. — The Secretary brought before the meeting a letter received from the Department of Trade and Customs in regard to the proposed questionnaire forms to be circulated amongst fruitgrowers in order to obtain statistics as to the number of trees and varieties of fruits grown.

The State Statistician addressed the meeting by invitation, and pointed out the unsuitability of the proposed forms and method of compilation. The Board was unanimous that the urgent needs in this respect were:—

(a) The average prices of varieties on different markets during the months of marketing.

(b) Crop forecasts, particularly in December, as to the approximate

production of the different varieties of Apples and Pears.

Overseas Export. Marketing.—Mr. F. Walker introduced the subject of the conditions ruling in regard to the marketing and distribution of fruit sent to overseas markets, emphasising the need of betterment.

He moved, and Mr. N. Campbell seconded:

"That the Hon. the Premier be requested to cable Sir Henry Jones to go into ways and means of providing a suitable scheme for exercising some central control over the marketing of overseas fruit shipments." Carried.

Codlin Moth Control.—For a long time, a large number of prominent growers in the Huon Municipality have been questioning whether the compulsory bandaging that is operative in controlling codlin moth infestation is necessary now that compulsory spraying is also practised. Meetings were recently convened at Franklin and Huonville, and resolutions were passed for the elimination of the regulation. The majority of growers are of the opinion that if two or three sprayings of arsenate of lead are properly applied, that the grub may be effectively controlled, and that bandaging is not an economic method of dealing with this pest.

ORCHARD NOTES.

Cultivation should now be in full swing. Where previous operations have caused the soil to bank around the trees, it is advisable to plough away from them to level the orchard surface.

The slower acting manures may be applied either scattering broadcast before ploughing, and then turning under or by hoeing in around young trees, where the feeding roots are developing. Better results are generally obtained by withholding the application of the quicker acting manures until the trees are in foliage.

Spraying.—Delayed dormant sprays for aphids, scales, red spider, may be applied as long as the trees are not too forward. At this period the young of these insects are developing. A thorough application with a good scalecide or insecticide will go a long way toward clearing up and controlling these pests.

Apricot Shot Hole Fungus and Peach Curl.—Spray as soon as the bud scales are relaxing, and the first growth is evident (delayed dormant). Bordeaux, Burgundy or Lime Sulphur mixtures may be used, the former finding favour with the majority of growers, owing to its efficient fungicidal qualities. Spray thoroughly, coating the whole of the tree with the mixture used.

Small Fruits. — Raspberries and Loganberries should have received attention, the old canes which have fruited being cut out and a selection made of vigorous canes to bear the coming season's crop. The latter will require trellising to attain good results, as cultivation and harvesting cannot be effectively carried on if they are allowed to run wild.

Black and Red Currants will require to have the barren old wood cut out. Beyond this, very little other pruning is required as long as the bushes are kept fairly open.

Strawberries.—The beds should be dug over and weeded, raking off and burning dead leaves and rubbish. When this is completed, the surface soil is brought to a good tilth, and they may be mulched down with straw or coarse stable manure.

F.M.MOORE & Co
LIMITED
Clarence House
Arthur Street, London Bridge
LONDON E.C., 4, Eng.

We are the largest receivers of Green Fruit from Australia, our consignments having steadily increased annually since our business was established in London in 1902. Our Managing Director has had the handling of consignments to the markets of Great Britain and Europe since 1900, and personally supervises the sale of all fruit consigned to the Company. Fruit is placed for sale in whatever markets or way (auction or private) appear most suitable, thus getting it before all classes of buyers; our increasing consignments demonstrate the success of this practice.

F. W. J. MOORE,
Managing Director.

Telegrams: **Tirralirra London**

Bankers: Bank of New South Wales.

Personal.—Fruitgrowers have lost a sincere friend and adviser in the person of the ex-Premier and Minister of Agriculture, Mr. J. B. Hayes, C.M.G. Owing to the circumstances leading to his resignation, and the consequent election of a new Ministry, he firmly declined to take office under the new Government. Mr. Hayes has, throughout his period as Minister of Agriculture, kept closely in touch with the fruit industry, realising the difficult periods it is passing through, and has at all times given matters his sympathetic consideration and help. His resignation is regretted by fruitgrowers in all districts.

REFRIGERATED FRUIT CARGOES.

Investigation into Fruit Shipping Problems.

Interim Report by Mr. F. Wakefield (Tasmania).

An interim report by Mr. F. Wakefield of Tasmania, who was commissioned to investigate with special instruments the shipment of fruit on T.S.S. "Port Pirie," has been received by the Secretary for the Tasmanian Fruit Advisory Board (Mr. P. H. Thomas), of which the following is a summary:—

Temperature Readings.—Owing to the positions in the holds the readings of the electrical thermometers distributed by me through the fruit mass show a slightly higher average temperature than those recorded by the ship's thermometers.

In ships

not provided with fans

to circulate the air this range in temperature through the mass must be much greater. Even with the efficient fan system installed in this case a range of over 10 degrees F. has been recorded during the early part of the voyage. False temperatures, due to a variety of causes, must also receive cognisance in this connection. The whole subject of the relation of thermometer readings to the actual temperatures of the fruit-mass will be more completely reviewed later.

Flesh Temperature and Air Temperature.

In this shipment we have a very considerable and dense mass of fruit —over 2,000 tons weight. Heat is abstracted by cold air circulating over cold grids and through the mass.

Whilst it is distinctly desirable to bring about a reasonably rapid temperature depression, there exists many attendant dangers if pressed too far.

To gain some idea of the rate of radiation under a critical set of conditions, a case was placed in a uniform temperature of 37 degrees F., with free circulation on all sides. The rate of temperature depression was surprisingly slow. The experiment was repeated using a single Apple suspended by a thread, and even in this case the fall in temperature was much slower than might be anticipated. The small depression rate is probably due to the heat evolved in the process of respiration off-setting that lost by radiation. Dealing, therefore, with 2,000 tons mass of fruit it will be obvious that, owing to the distance of the fruit centre from the peripheral grid surfaces, temperature depression must be gradual.

Temperature Depression.

If temperature readings at a number of points through the fruit mass, are taken and averaged out, the resultant may yield a very false expression for the mass as a whole. It will be obvious that if the tempera-

ture at one point is as low as 10 degrees, and at another as high as 60 degrees, the average erroneously represents the whole as at the very satisfactory temperature of 35 degrees. At the same time the average temperature at given interval of times gives the only satisfactory means of expressing the rate of depression and the general temperature conditions of the mass as a whole.

Hold Atmosphere Conditions.

In the early stages of the voyage the prevailing high temperatures in the holds induced a relatively high rate of metabolic activity which results in the evolution of considerable quantities of C.O.2. Fruit loaded at Beauty Point on the 28th of April had evolved sufficient of this gas to bring the hold up to 8 per cent. C.O.2., whilst we were yet still in Hobart. Over a period of 4 days recently the C.O.2 increase recorded was only 1 per cent. This must be correlated with a depression in the rate of metabolic activity indicating the efficiency of the hold conditions in retarding the process of maturation. **The fan-system installed is working very satisfactorily, and is easily able to control the atmospheric conditions with the holds.** Determinations of the C.O.2. pressure are made regularly, and the relations between this and the operations of the fans is clearly indicated.

Local Damage.

In a previous report I touched upon slight damage resulting from close proximity to and drip from the grids. Samples taken yesterday from a few such cases so affected were rather reassuring, however, and Apples were extracted for further observation and special report. The drip from the iron pipes of the grids coming in contact with the tannins in the stringy bark timber of the cases results in the formation of deeply coloured iron tannates. The cases may thus be darkly stained in such instances, but on inspection, it was found that the fruit was unharmed.

Appreciation.

It is noted with much appreciation that no effort is being spared and no labour too great, or task too difficult, to undertake in the interests of this shipment.

In conclusion, I would again express my appreciation of the spirit of co-operation shown to me by the Captain, the Chief Engineer, and all members of the crew, and of the facilities provided to enable me to carry out tests and temperature readings, etc., and I am deeply indebted for the privilege of opening up the holds and making inspections from time to time of the fruit itself, which at the moment of writing seems very satisfactory.

(Signed) F. WAKEFIELD.

Queensland.

Current Items of Interest.

FRUIT interests centre largely around the various exhibits and displays at the Royal Society's Show in Brisbane on 6-11th July. Owing to the range of climate and varieties of fruit, it is not possible to exhibit a complete collection, particularly of tropical fruits at any specified date, nor to secure really representative exhibits from the various districts at the same time.

On the whole the fruit shown was creditable to the competing districts, particularly the display from Woombye, which secured a rather easy win. Bananas, Citrus and Pineapples were prominently displayed. Custard Apples, Passion-fruit, Strawberries and other numerous lines were well represented. In individual exhibits, citrus evoked the most competition, some high grade fruit being shown from various centres, the exhibits from Gayndah again demonstrating that the drier alluvial areas with numerically very few growers can outclass the best production of volcanic coast lands.

An instructive exhibit by the Department of Agriculture, showing the correct method of **packing Oranges**—the cases being reduced to longitudinal sections, so that the placing of fruit of the different grades in each successive layer were exposed, was much eulogised, as was also a class containing numerous entries of cases of Oranges packed by children. The results of Mr. Rowland's (packing expert) instruction of juvenile classes was seen to advantage. Unfortunately no special feature was made of new or improved varieties of Orange and Mandarin, of which several are now available. In fact, throughout the fruit section no new or novel varieties were noted.

Stanthorpe district made an enticing display of Apples—from cold storage—and subsequent remarks from that quarter suggests profitable possibilities in retaining other fruits, including Grapes in cold store to be available practically throughout the year. Possibly absence of appreciation is responsible for your correspondent viewing the production of temperate fruits on an extensive scale in Queensland with distinct pessimism. Just where profitable markets are to be available does not appear to enter into consideration. The marketing proposition is still in the air and the expense incurred to the end of June last by the Agricultural Council, £24,993/0/5, is concerning producers to know what result, if any, has been obtained for the outlay, also whether more profit is not to be derived from membership privilege, etc., than falls to the lot of the average producer.

The "Rural Log" has given but little concern to the fruitgrower, who, being mostly also his own labourer, was not interested in the exemption.

In the coastal fields a generous rainfall will ensure a good spring growth. Continued cold weather has retarded this, and also affected the development of winter Pineapples—which have been in super-abundant supply. The young growth is slow, and also with Bananas, which **following upon a rather dry summer, means a much reduced output.**

The question of bunchy top still concerns the southern border grower, and it has been reported that a joint investigation into the malady is to be conducted by Dr. Darnell Smith (N.S.W.) and Mr. Henry Tryon (Queensland).

It seems incredible that the authorities concerned view with almost complacency the financial ruination of its settlers and the abandonment of their holdings, and the decay of an important industry on which so much depends.

QUEENSLAND COUNCIL OF AGRICULTURE.

Cost £24,993/0/5 to End of June.

In the Legislative Assembly on August 1st, the Minister for Agriculture and Stock (Mr. Gillies), replying to Mr. King, said that the total cost of the Council of Agriculture since its inception to June 30, 1923, was £24,993/0/5. The total amount of wages paid to the 31 employees was £171/9/5 per week. A sitting fee of £2/2/- was paid to each member of the Council, together with £1/11/6 per day travelling allowance, and rail and (or) steamer fares.

Western Australia.

ORGANISING CITRUS GROWERS

A conference of Western Australian citrus growers recently decided to form a Central Association on similar lines to the other States. It was also resolved to affiliate with the Eastern States on the Federal Council.

ADELAIDE ROYAL SHOW.

The annual Show of the Royal Agricultural and Horticultural Society of S.A. will be held at the Jubilee Exhibition and Ground, Adelaide, from September 11-15.

Victorian Orchardists' Co-operative Association.

It is reported that the Western Market site previously occupied by the V.O.C. has been purchased by Messrs. Silk Bros.

The Flinders-lane property and cool store will be sold by public auction on October 3rd.

Cold Storage of Fruit

SCIENTIFIC AND PRACTICAL EXPERIMENTS.

Studies in Apples, Pears, Peaches and Plums.

By D. B. Adam, B.Sc., Science Branch, Department of Agriculture, Victoria.

FRUIT MAY DETERIORATE as a result of a variety of causes. Broadly, however, these causes of loss fall into two groups —. (a) Due to the presence of external invading organisms, mainly mould fungi, and (b) The so-called physiological causes where no isolable organism is associated with the disease. The condition is the result of inherent normal or abnormal changes during the life history of the Apple.

I propose to deal with the latter type first.

The section includes Scald, Internal Breakdown, Bitter Pit and Jonathan spot.

Scald.—A very important factor bearing on the development of Scald is the maturity of the fruit. Mature fruit, and quite immature fruit, are more likely to scald than what might be termed medium mature fruit. For instance, some Jonathans picked on the 22nd March this year at Drouin and stored at 32 deg. F. showed slight scald 19 per cent. medium, 42 per cent. badly scalded, 17 per cent sound, whereas fruit off the same trees picked 3 weeks later, 15th April, showed only 2 per cent. slight scald, 1 per cent. medium scald, none badly scalded, and 97 per cent. sound. **These remarkable results show the great necessity for picking at the correct time.**

The second point illustrated was the value of efficient ventilation. Two cases of Rome Beauties were stored at 34 deg. F., one case was arranged so that a draught of air directly from the duct passed through it: this fruit was as similarly treated in all other respects as is practically possible. It was large and immature; the fruit stored under the duct showed 2 per cent. scald, the other case showed 78 per cent. of scald. It is seen from this that where the conditions for scald development are favourable the **minimising effect of ventilation is remarkable.**

As efficient a ventilation as this, however, could not be obtained on a commercial scale.

With some Rymers grown at Ringwood, fairly mature, only 1 per cent. scalded in the direct expansion and air circulation chamber, whereas 7 per cent. were scalded in the direct expansion alone chamber.

Temperature does not seem to be an important question in connection with scald, and inconsistent results have been obtained so far in storage under different temperatures.

In view of American investigations, and the above results given, it was decided to try the effect of placing the fruit in a gas at least chemically analagous to the gases given off by an Apple. The result was to produce a typical scald on many varieties of Apples. The time required to produce an injury varies in different varieties. Thus Jonathans and Rome Beauties were badly scalded, whereas Granny Smith and Dunns were practically immune.

The results corresponded well with the known susceptibility of the different varieties in actual cool store practice.

Mr. D. B. Adam, B.Sc., is a capable young scientist attached to the Science Branch of the Victorian Department of Agriculture. He presented the paper, which we publish herewith, before the Cold Storage Conference at Harcourt last month. The paper was well received and favourably commented on.

In this sphere of scientific research the Department of Agriculture is rendering notable service to the important primary industry of fruitgrowing.

It is noted with pleasure that Mr. Adam is endeavouring to view his experiments in the light of commercial utility rather than narrowing same to matters of academic interest.

The Causes of Scald.

Firstly, it is clear that the causative agent is connected **with the Apple itself**; its occurrence is much more closely correlated with the varying condition of fruit than with any cool store condition.

Secondly, this agent is a gas, since its action is mitigated with circulation.

Thirdly, it belongs to a group of chemical substances which have a definite action on the surface cells producing the characteristic pattern so typical of scald. Carbon dioxide, the gas most abundantly produced by fruit, does not produce this action, and may therefore be dismissed as the variety of Apple considered.
the causative agent. Several agents capable of this action have been isolated from Apples.

Fourthly, and this involves a theoretical conception which it is hoped will be either proved or disproved at an early date, medium mature fruit appears to evolve larger quantities of the noxious gas than mature or quite immature fruit.

Fifthly, the surface cells of different varieties of Apples and at different degrees of maturity appear to possess different degrees of resistance to the deteriorating effect of the gas.

Finally, to be constructive, what are the remedies?

(1) **To study the maturity at which to pick the Apples:** this is largely a matter of experience; it is difficult, as you well know, to give an accurate description of an Apple at any particular stage of maturity. The tone of the green ground colour is to me the most satisfactory index; this should be a light green.

(2) **Any gases formed should be removed.** There are two ways of doing this—

(a) By ventilation, which, however, is not of much avail under commercial conditions, when the conditions for scald development are at all favourable.

(b) The use of oiled wrappers: this has ample theoretical justification, and the results obtained by its use in America have been most encouraging. At present there is fruit in store which has been wrapped in oiled papers. The oil was specially imported from America, is tasteless and odourless, and has not, as far as I can detect, had any bad effect on the flavour or quality of the fruit.

This second method is a most **hopeful avenue of immunity** from the consequences of scald. Actual working conditions in the orchard and other factors difficult of control may militate against the vigorous application of the first principle, i.e., picking at correct maturity; but the use of oiled wrappers subsequently seems to ensure a minimum of scald injury.

Internal browning should be distinguished from internal breakdown, the "punky" or "sleepy" Apples with which you are familiar.

The former is not so commonly noticed by the storeman, for it can only be seen by slicing the Apples open. Some varieties are more liable than others; its distribution in the tissues also seems to be dependent on the variety of Apple considered.

Thus Rokewoods last year, about October, showed a uniform browning throughout the tissue. This, when first removed from store, was not very well defined, but subsequently developed rapidly. The Apples do not become soft in the same way as a sleepy Jonathan, they are springy: it is difficult to press your finger into the tissue.

Thus browning is much more severe at a temperature of 32 deg. F. than at 37 deg.

To show that this trouble is of some importance, and may account for the occasionally inexplicable adverse reports as to the condition of fruit landing in Sydney, the following case may be cited.

A man storing Rokewoods in Melbourne sent them to Sydney about the end of October. They left the cool store in perfect condition: when they arrived in Sydney, very many were soft and unsaleable, according to report.

Why? asks the grower.

By chance there were some of these same Apples in the experimental chambers: on examination they were also found to be perfect externally: when transecting, however, it was found that the tissue had browned in varying degrees in different Apples. In the course of a week about 80 per cent. of those stored at 32 deg. F. were soft, and 20 per cent. of those stored at 34 deg. F.

Of all the Apples stored last year, these Rokewoods showed the greatest reaction to temperature.

The value of storage at 34 deg. F. to 35 deg. F. as against 32 deg. F. was plainly demonstrated.

Other experiments with Rome Beauty Apples showed that internal breakdown is more severe at 32 deg. F. than at 37 deg. F.

As an instance of a more localised browning effect the experience with Rymers may be quoted.

In these Apples, examined in December, a browning of the core region alone was observed. The occurrence of this trouble was not extensive, so little data as to the relative effects of different cool store conditions was obtained. This trouble is of special interest in view of its resemblance to "brown heart" though certainly the conditions here were not the same as are considered to produce brown heart on board ship, viz., excess concentration of carbon dioxide.

Internal breakdown, sleepiness, etc., seems to originate from fundamentally different causes. One of the more obvious features in internal breakdown is the ease with which individual cells of groups of cells may be separated. This is shown in the ease with which these cells are held together by complex chemical substances called **pectoses or pectinagens.**

It is not proposed to touch this question here beyond saying that these substances which are very indefinite and of which very little is known, change at varying rates under different conditions of storage into other substances which are soluble. These changes naturally affect the fruit as a whole. These substances are of fundamental importance in all fruits, particularly Pears, Peaches and Plums. It is hoped that much more attention will be devoted to their study in the near future.

Jonathan spot is not a very serious disease. It is harmful in that it detracts from the appearance of the fruit, no rotting of the flesh accompanies it at all, nor does any rot commence after removal from store. All attempts to isolate a causal organism have failed.

Besides the Jonathan, Jonathan spot also occurs on the Scarlet Nonpareil, where it was even worse last year than on Jonathans. Rome Beauty Apples suffer to a slight extent. Observations and records were made of its occurrence of Jonathans in cool store. These showed that while it is a cool storage trouble, cool storage conditions have little, if any, effect, but there is a correlation between maturity and Jonathan spot; fully ripe Apples are the most subject. Where Apples are of much the same maturity, highly coloured fruit seems less susceptible than poorly coloured fruit. A degree of maturity seems to be attainable where the fruit is not too immature for scald nor too mature for Jonathan spot.

Bitter Pit.

This disease (unfortunately from the experimental standpoint) only developed in one lot of Dunn's. However, some of this fruit was stored at 32 deg. F., and other cases of it at 34 deg. F. The fruit was picked on March 10th, examined on November 21st: fruit stored at 32 deg. F. showed 16 per cent. of pit; stored at 34 deg. F. 26 per cent. of pit. A 10 per cent. difference of 2 degrees rise of temperature. This should be noted together with the time that this fruit was picked, which was early for this variety. These are mentioned with a view to adverting to a consignment from Harcourt, which was reported by the Agent-General to be badly pitted.

A sample case of the consignment was returned to the grower with the local opinion added that some cardboards used instead of wood-wool, were probably in part responsible for the excessive development of pit. From a press report, I understand this view did not coincide with that of the grower.

Now, although the cause of Bitter Pit is not known, in a large number of cases its appearance generally coincides with the time when starches in the Apple are converted into sugars.

The Dunns previously referred to and the Harcourt lot referred to by the Agent-General were almost certainly, judging from the time they were picked, still in the starch stage, so that while perfectly sound when picked, they, as events subsequently proved, had an **inherent capacity** or potentiality to become pitted; and, secondly, the time at which this pit would appear would be dependent on **how long** it was before the starch was converted into sugars. This time depends on the storage temperature. Thus after a definite period we saw the Dunns at a higher temperature, 34 deg. were pitted worse than at a low temperature, 32 deg. F. With the Harcourt fruit at present considered the card-board all around must to a certain extent have acted as an insulator. This would prevent sufficiently rapid cooling with the result that pit appeared earlier, i.e., early enough to spoil the sale of the fruit, than would have been the case had the fruit been quickly lowered to 32 deg. and held there. Of course the foregoing is simply a personal opinion.

Wilting is dependent on two main factors:—

1. The relative humidity of the air of the chamber. This, as you well know, is affected to a great extent through the density of the brine.
2. Inherent factors.
   (a) Peculiar to the variety: Thus Scarlet Nonpareils wilt much worse than do Jonathans.
   (b) Fruit picked too early wilts worse than mature fruit. Doubtless both of these inherent factors are dependent on the changes in pectin content previously mentioned.

The consideration of mould losses will be postponed till the same question is being considered with Pears.

Pears and Soft Fruits.

In passing to Pears and soft fruits it is proposed to merely give a resume of the work done, and an indication of what it is hoped to do.

Pears, since they are relatively a softer fruit than Apples, and more affected by decay caused by mould.

Practically all moulds require an injury to the surface of the fruit before they can enter. These moulds are mainly the penicillimus.

First to deal with the effect of **temperatures.**. Winter Nelis Pears at 32 deg. showed 90 per cent. sound; at 34 deg. showed 67 per cent. sound after a four months' storage period.

2nd. The value of **wrapping.** Winter Nelis Pears were wrapped, some every layer, others each alternate layer, others were not wrapped at all. All were stored at 34 deg. F., the experiment was done in triplicat under 3 systems of refrigeration, the results with each showed remarkable uniformity. Every layer wrapped had 87 per cent. 84 per cent. and 36 per cent. sound under the three systems employed, viz. (1) Air Circulation, (2) Direct Expansion, and (3) Direct Expansion and Air Circulation respectively: The alternate wrapped were 68 per cent. and 70 per cent. sound. The unwrapped were 69 per cent., 69 per cent., and 65 per cent. respectively.

The figures showed a decided advantage in total wrapping, but a negligible difference between alternate layers wrapped and unwrapped fruit. There is also practically no difference between the different systems of refrigeration.

An interesting experiment, which gives a quantitive idea of the damage done in the first instance by walking on a packed case, and in the second instance by packing a case too tightly. In each case one-half was sound, the other damaged. In the first instance, 82 per cent. were sound in the good half, and 47 per cent. were sound in the damaged half. In the second instance, 80 per cent. and 62 per cent. were sound in the good and the damaged half respectively.

Of physiological diseases little may be said. The blackening of Keiffer Pears was mentioned last year as being due to the changes of chemical substances peculiarly inherent in this variety: experiments are being carried out this year to see whether picking very early will mitigate this evil. The fruit has not yet been examined.

Some experiments with W.B.C. Pears have been carried out this season. The results are not completed yet.

The maturity at which they are picked and the rapidity with which their temperature is reduced are two important factors. Both affect the pectin content which it is considered is of profound importance to the keeping quality. I am of the opinion that if a full knowledge of these pectins be obtained, the success of Pear storage is assured.

W.B.C. Pears can readily be held for three months, to give a storage product which will hold up for a week to 10 days by which time the product has developed an excellent flavour. Pears from the Goulburn Valley have also kept 3 months in perfect condition. These Pears either deteriorate by softening at the core, when removed from store they blacken after a few days. This blackening is quite distinct from the blackening of Keiffer Pears previously mentioned.

Peaches in Cold Storage.

Several varieties of Peaches were stored at different temperatures. The majority of samples were obtained from Doncaster. **Peaches even more so than any other fruit depend for their keeping qualities on the maturity at time of picking.**

Varieties also differ greatly, some, nearly all, will remain sound to the eye for six or eight weeks, but the quality differs greatly, some get quite acidic in taste, the Elberta and Late Red for instance. The latter is especially good in other respects—juiciness, etc.; the disagreeable acidity, however, seems to be characteristic of the variety, and under no condition of storage can it be avoided.

Some Doncaster seedlings were very promising; one in particular, a seedling of Mr. Webb's, retained an excellent flavour after six weeks' storage, which fruits may have by chance been picked at its optimum maturity: there is no doubt that it is a most promising variety.

Peaches, especially if picked in certain condition, become spongy; this is a common fault which I think can be remedied: it appears to be due here again to the ubiquitous pectin changes forming a jelly in individual cells.

Plums

deteriorate after long storage through a generalised softening. This again is probably the result of pectin changes. Varieties of Plums vary greatly in the time they take to soften. The Jefferson Plum was the best tested last year for firmness after a period of storage, the flavour here, however, is not as good as in some other varieties. Some Plums were held in good condition for six weeks, although nearly all softened somewhat. This softening, if it has not proceeded far, does not seem to be objected to, which is fortunate.

The softening is accompanied by a progressive dryness, which again varies with the variety.

The time of picking has some bearing on the rate of softening of the fruit and its flavour, but these are not nearly so much affected as in the case of Peaches. Again, Plums, from the nature of their flavouring and aromatic principles, do not seem to lose their flavour so readily in store as the flavour of Peaches was at maturity.

With both Peaches and Plums nothing has been said about mould decay losses.

These are important, but no definite experiment was carried out to test their quantitative importance. This, because there were only small lots of each variety. But the importance of care in handling must be obvious.

As a result of an experimental shipment last year, it was shown that these fruits should be sent in trays singly; for Peaches, wood wool around each Peach, wrapped in a single, preferably branded wrapper, well and evenly graded for colour and size. The trays to have cleats on their ends.

A storage temperature of 34 degrees is a satisfactory one for Peaches and Plums, this should be attained quickly.

With Citrus last year, the experiments very clearly showed that Oranges can be held in store for 90 days in commercial condition, i.e., less than 20 per cent. loss, provided they have had the best of treatment. This should include—

(1) "Sweating" for from 1 week to a fortnight by placing on shelves in a barn.

(2) Wrapping in tissue papers not waxed papers.

(3) Holding at 34 deg. to 35 deg. F.

Lemons were held sound for an even longer period. "Sweating" before placing in store in easily the most important pre-requisite for successful storage for a four or even five months' period for this fruit.

Experiments have been conducted with **Passion-fruit** and **Tomatoes**. Their commercial life in cool store here, however, was limited to three weeks at the outside.

SUBSCRIBERS' PAYMENTS RECEIVED.

The following are the subscriptions received from July 20th to August 20th, 1923. The month quoted in parenthesis indicates to what date the subscription is paid. These are exclusive of the subscribers who have paid to local agents or to our offices in the various States:—

J. D. Abey (Nov., '23), H. Archibald (July, '24), Australian Prod. Wholesale Fedn. Ltd. (July, '24), E. Beales (May, '24), E. Brighton (Aug., '23), W. Burrows (June, '24), J. Bray (June, '24), Alex. Bruce (May, '24), W. Bennett (Jan., '24), J. Brown (July, '24), E. H. Bennett (July, '24), W. B. Beal (July, '24), S. H. Brown (July, '24), C. H. Button (June, '24), H. Carson (March, '24), W. Carter Clayden (June, '23), G. A Campbell (June, 24), M. V. Closhesy (June, '24), J. F. Considine (July, '24), R. D. Crimp (July, '24), W. J. R. Cummings (July, '24), C. Cawood (July, '24), C. K. Crockford (June, '24), G. Crosby (Dec., '23), H. C. Connor (Dec., '24), D. Dawson (June, '24), Donkerhoek Fruit Synd. (May, '24), W. J. Davies (June, '24), E. J. Dunn (July, '24), H. P. Duffield (July, '24), A. J. Eastley (July, '24), W. R. Elvery (Aug., '23), E. V. Fankhauser (May, '24), H. A. Flenley (July, '24), A. F. Flenley (July, '24), M. I. Fishbourne (July, '24), N. W. Filsell (Dec., '23), C. H. Finger (Aug., 23), E. N. Gamble (July, '24), M. B. Geneste (May, '24), Glasson Bros. (July, '24), C. Gill (July, '24), C. Guilfoyle (July, '24), D. Gordon (June, '24), W. H. Groat (July, '24), F. Gottschrutyke (July, '24), W. J. Hannaford (Dec., '23), P. Hansen (June, '24), F. A. Hays (Feb., '24), A. S. Henderson (Dec., '23), Hooton, J. (Aug., '24), F. J. Hawkes (June, '24), W. G. Hunt (June, '24), G. L. Hardie (June, '24), W. Hallett, (June, '24), W. Herath (July, '24), W. T. Hudson (July, '24), R. Janson (Dec., '23), H. Jones & Co. Ltd. (July, '24), J. Johnston (Dec., 23), C. Johanson (Dec., '23), A. N. Jones (May, '24), W. O. Jackson (June, '24), J. W. Jamieson (July, '24), G. P. Jenner (July, '24), A. A. Jenner (July, '24), A. G. Keeble (Feb., '24), N. M. Keamy (Nov., '23), G. Knee, Jnr. (July, '24), F. T. Krake (July, '24), E. Lawford (July, '24), S. Lowe (Dec., '23), A. E. Lloyd (June, '24), J. Lockhead (Nov., '23), H. W. Lush (July, '27), T. J. Lay (July, '24), A. D. Lum (July, '24), D. F. Magnay (July, '24), — Maloney (May, '24), W. J. May (July, '24), Mildura Co-op. Fruit Co. Ltd. (June, '24), C. Molyneaux (April '24), A. V. Montgomery (Dec., '23), S. Mounter (Dec., '23), W. E. Muspratt (July, '4), F. Munnerley (Dec., '23), Moser & Stevens (June, '24), C. H. Martin (June, '24), W. E. Missen (July, '24), E. Middleton (July, '24), V. A. Moore (July, '24), A. P. Myntmeier (July, '24), J. J. Murray (July, '24), C. Musgrove (Jan., '24), H. B. Muntz (June, '24), A. S. McKenzie (Sep., '23), F. M. McKenzie (July, '24) P. Neville (Aug., '23), R. C. R. Newman (Dec., '23), G. A. Nobbs (July, '24), F. Neuparth (Jan., '24), W. H. Oakes (July, '27), H. Pickworth (Dec., '24), G. S. Potts (June, '24), R. Pollock (July, '24), R. H. Pearce (July, '24), C. Puddephatt (Sep., '23), W. Ranger (July, '24), G. Richards (July, '24), Robinson & Son (July, '24), J. T. Rowe (April, '24), E. Russell (May, '24), E. Roberts (June, '24), W. Reyne (July, '24), E. H. Rowe (June, '24), T. Sage (Nov., '23), B. B. Sampson (Feb., '24), H. Scarlet (July, '24), C. A. Setterberg (Feb., '24), Settlers' Club (May, '24), Sellecke & Stubbe (Dec., '23), Sheehan Bros. (July, '24), J. Shand (Sep., '23), J. G. Shield (April, '25), A. Sloane (July, '24), W. M. Smith (June, '24), C. Summers (June, '24), J. J. Scarce (July, '24), N. L. Smith (July, '24), W. C. Strachan (July, '24), M. D. Strother (July, '27), A. Shugg (July, '24), C. Smith (July, '24), W. B. Smith (July, '24), J. Skinner (Aug., '23), E. O. Symons (June, '24), Thompson Bros. Ltd. (May, '24), A. F. Thiele (July, '24), F. Thomas (July, '24), J. Tully (July, '24), D. Tully (July, '25), F. Tucker (July, '25), J. J. Tully (July, '24), H. H. Tiller (July, '24), E. Tode (July, '24), W. H. Tickell (July, '24), S. P. Taylor (July, '24), J. Taylor (July. '24), N. H. Underwood (July, '24), K. H. Webb (May, '24), K. Westbrook (May, '24), L. J. M. Western (Dec., '23), John F. White (June, '24), S. Whitten (July, '24), J. F. Wright (Sep., '23), W. R. Woodham (July, '24), Wood, Son & Co. (July, '24), H. W. Wright (June, '24), T. J. Williams (June, '24), G. A. White (July, '24), D. A. Walters (July, '24), N. E. Wellington (July, '24), H. Wilkinson (June, '24), H. P. Watmuff (July, '24), J. Wishart (Dec., '23), G. H. Wilkins (July, '23), S. Youlden (Mar., '24), A. Zerbe (July, '24).

Seasonable Spraying Hints

Mr. C. G. Savage, Deputy Horticultural Instructor for South Australia, and Manager of the Berri (S.A.) Experimental Orchard, writes:—

The standard **Bordeaux Mixture** is made on the following formula:—

6 lbs. bluestone.
4 lbs. lime (fresh lumpy lime).
50 galls. water.

The quantities of bluestone and lime are often increased in the above ratio, the water remaining constant.

The advantage of Bordeaux Mixture over the Burgundy is that it does not scorch the leaves like Burgundy does, but this advantage can only be claimed when good fresh lumpy lime is used. Old slacked and carbonated lime does not give the best results.

Where there is difficulty in obtaining pure lime, most growers prefer to use Burgundy Mixture; it is better to use a good Burgundy Mixture than a poor Bordeaux.

The standard **Burgundy Mixture** recommended for general use against fungoid diseases is—

6 lbs. bluestone.
9 lbs. washing soda.
50 galls. water.

The bluestone is often increased to 7 or 10 lbs., with a proportionate increase of the soda.

Preparation of Bordeaux and Burgundy Mixtures.

The mixing of the mixtures is usually carried out as follows:—The bluestone is dissolved in one vessel. Owing to the corrosive action of this salt upon metal, wooden vessels are recommended.

The lime is slacked and mixed with water in another vessel in the case of Bordeaux, and where Burgundy Mixture is being used the soda is dissolved in the second vessel.

Usually two barrels are used, each holding some 50 gallons of water, and are set on a stand high enough up to allow the spray cart to be backed under, so that the tank may be filled straight from the barrels.

Where the bluestone solution can be made over night, the bluestone is tied in a piece of cloth and suspended just under the surface of the water, and in a few hours the crystals will be dissolved.

Never place the bluestone in the bottom of the water, as great difficulty will be experienced in dissolving it.

Where time will not permit of the bluestone being dissolved in this way, it may be quickly dissolved by pouring hot water over it, and stirring well; water is then added to make up the desired quantity.

When ready to spray, the spray tank is placed below the barrels, and the two solutions are run together into the spray tank, care being taken to strain the mixture as it enters the tank, and thorough stirring is essential to form a finely divided precipitate.

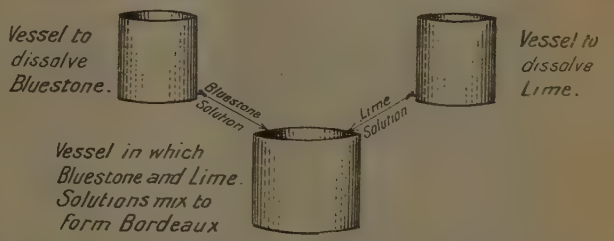
This mixture may be either acid, neutral or alkaline, and is tested by the means of phenolphthalein, or litmus paper.

To prepare an alkaline spray, soda solution is added to the bluestone until the white phenolphthalein paper just shows a pink tinge. By the addition of a small quantity of bluestone solution to an alkaline mixture a neutral spray is obtained, while a greater quantity gives an acid mixture.

An acid mixture turns blue litmus paper red whilst an alkaline mixture turns red litmus blue.

The advantage of acid and neutral sprays is that they are quick acting, and are used where immediate results are necessary, as in the case of the early spring sprays. The disadvantage is that they are readily washed off by heavy rain.

Alkaline sprays adhere longer to the plants, and are recommended for summer use on that account. They continuously release sufficient copper compounds to protect the plants from the fungoid disease.


Vessel to dissolve Bluestone.
Bluestone Solution
Lime Solution
Vessel to dissolve Lime.
Vessel in which Bluestone and Lime Solutions mix to form Bordeaux

Some growers still "mix" their copper sprays wrongly. It is not alone the ingredients, but the METHOD of mixing which ensures success.

It is IMPERATIVE that the diluted Bluestone and lime (or soda) be mixed separately and flow equally together into the third vessel to make Bordeaux or Burgundy mixture.

Where large areas have to be sprayed, and the mixing apparatus is inadequate for mixing dilute solutions, stock solutions are made and diluted down as required. Usually 1 lb. of bluestone and 1 lb. soda is added to each gallon of water to make the respective stock solutions of bluestone or soda. The operator then knows that each gallon of bluestone stock solution, or each gallon of soda stock solution, contains 1 lb. of the chemical required.

Fighting Fruit Pests and Diseases

APHIS (PEACH), Black and Green.

Attack peach, nectarine, plum and cherry trees, roses, etc. They cause leaves to curl and dry up, and injure young shoots. Spray during winter with lime sulphur 1-9, or red oil 1 in 20, petroleum emulsion 1-30, crude petroleum 1-25. In the summer use nicotine preparations.

ANTHRACNOSE (Black Spot of the Vine).

Swab with sulphuric acid in midwinter (refer to details in later article). Spray with Bordeaux mixture, 3-3-40, when the buds are about to burst, and again after the fruit sets. Watch the plants during spring and early summer, and spray again

if disease again observed. Spray with ammoniacal copper carbonate if the disease appears prior to ripening. This wash does not stain the fruit.

BLACK SPOT OF APPLE AND PEAR

(Fusicladium Dentriticum and F. Pyrinum).

This fungus attacks both fruit and leaves of apples, pears, etc., forming circular patches on the fruit, and causing it to crack. Spray with Bordeaux mixture, 6 parts bluestone, 4 parts lime, 40-50 gallons of water, or Burgundy mixture, 6 parts bluestone, 9 parts soda, 40-50 gallons of water, or lime sulphur, 1 in 15, just before the blossoms open, and again 10 days to two weeks later with lime sulphur, 1 in 35. This disease should be closely watched, as in the case of a cold snap or continuous wet weather another spraying should be given besides those already recommended.

CODLIN MOTH.

The grubs which are hatched from the eggs laid by the moths attack apples, pears, plums, apricots, quinces and walnuts. In spring the moths lay their eggs, usually at the calyx end of the young fruit. The grub hatches in 8 or 9 days, and eats into the core. When fully grown the grub eats a tunnel to the outside of the apple. There are several broods in a season. Spray with arsenate of lead (5 lbs. paste to 100 gallons water; or powder proportionately as per directions of manufacturers.) First spraying after petals fall, getting as much liquid into the calyx cups as possible, and at intervals of from 21 to 30 days, until within 21 days of gathering in the case of early fruit, and until about end of February in the case of late fruit. In northern districts and dry summers, spray at shorter intervals. Arsenate of lead can be added to the commercial tobacco extracts if woolly aphis is present. All fallen apples affected with codlin grubs should be gathered up and destroyed. Bandage trees to trap caterpillars. (See also light brown apple moth and painted apple moth.)

LEAF CURL OF PEACH.

In spring leaves become puckered and discolored, and soon drop. Trees badly affected with leaf curl will not set fruit. Spray with Burgundy mixture, 6-9-50, in winter; and with lime sulphur, 1 in 15, before the blossom buds burst.

LOOPER CATERPILLARS.

A troublesome native pest, which attacks apples and pears when small. Some caterpillars resemble dead twigs, and are hard to distinguish. Spray whenever observed with arsenate of lead, 1-25.

OIDIUM.

A fungus disease which attacks grape vines. Dust flowers of sulphur over the vines just before blossoming, and at any time during moist and muggy weather, especially in early spring.

PAINTED APPLE MOTH.

These moths often appear when the flowers are commencing to show, and are very destructive to fruit spurs and young fruits of all kinds. It is advisable, therefore, to spray early with arsenate of lead, 1 in 25.

RED SPIDER, RED MITES, BRYOBIA, Etc.

Tiny insects which suck the sap from the leaves, causing them to turn yellow. They are very difficult to detect until considerable damage is done. They attack apple, plum and other trees, also dahlias, roses, beans, etc. Spray deciduous trees in winter with lime sulphur, 1 in 9, or red oil, 1 in 25. If present in summer, spray with nicotine sulphate, benzole emulsion, or pine spray. The under side of leaves must be thoroughly sprayed.

SHOT HOLE.

A fungus disease, which attacks apricot, cherry, plum, peach and nectarine trees. Spray with lime sulphur or Bordeaux mixture (winter strength) as soon as possible after pruning in early winter; at summer strength just before the buds open in the spring; or with standard copper mixtures (on apricot trees) in the autumn. Do not spray apricot trees with lime sulphur.

SLUG OF PEAR AND CHERRY.

A serious pest on pear, plum, cherry, peach and quince trees. They attack the tree mainly in late spring, when the foliage is young. Spray with arsenate of lead, 1 to 25, when the caterpillars make their appearance. Dust the trees with lime, powdered arsenate of lead, ashes, sulphur dust or sand.

STRAWBERRY BEETLE.

In November and December these insects do considerable damage to strawberries. The beetle attacks the leaves and flowers, and the larvæ bore into the plant. Spray with arsenate of lead, 1 in 25, before the fruit is ripening. As a deterrent spray, use benzole emulsion.

THRIPS, OR WHITE BLAST.

One of the worst insect pests, very tiny, which attacks all kinds of fruit trees, flowers and vegetables (especially onions). Use benzole emulsion phenyle or nicotine sprays. Spray apple, pear and other fruit trees before flower buds open. Thrips appear during the first summer days. Keep vegetable and garden plants well watered, which keeps insects in check.

TOMATO OR CUT-WORM MOTH.

Attacks tomatoes, grapes, plums, apples, apricots, etc., as well as cereals such as maize, garden plants, etc. Use poison baits of greenstuff or bran and arsenic, but be careful to keep children and domestic animals away. Spray with arsenate of lead, 1 to 25; keep soil around plants well worked.

Republished from the Fruit World Annual which contains complete spraying calendar and much other interesting matter.

Citrus Culture

Essentials for First Three Years.

At a recent meeting of fruitgrowers at Loxton, South Australia, Mr. S. V. Fuller dealt with the care of citrus trees from the time of planting up till the third year of growth. The lecturer stated:—

THE CITRUS FAMILY is a most hardy and long living one, provided conditions are not altogether uncongenial, and will respond quickly and readily to good treatment. The trees are able to withstand great heat, and a few degrees of frost without damage.

Citrus trees are particular in one respect, they will not stand cold wet feet, they **must have good drainage,** or an ideal soil consisting of a strong sandy loam with a gravelly or open subsoil. It is surprising how well Oranges will do in a naturally poor soil, provided they have fair treatment and good drainage.

Eight Essential Points.

(1) Suitable climate and soil;
(2) Proper preparation of the soil;
(3) Correct stock trees worked on and procured from healthy selected stock;
(4) a regular supply of congenial food;
(5) Water supply during periods of drought;
(6) To disturb the roots as little as possible;
(7) To keep the ground free from weeds and undergrowth;
(8) Shelter from strong winds.

Assuming the intending planter has found a suitable spot, and paid due attention to soil preparation (by this I mean land to be well broken up by means of a plough and subsoiler to a depth of 18in. to 20in. if possible), the next point to be observed is the **selection of the trees.**

Naturally these should be of a robust, healthy appearance, and of a good dark green color, but particular care must be paid to **the stock** on which the plant is to be budded. There are a number of stocks that the Orange family can be worked on, such as citronella, seedling Orange, Seville, and citrus trifoliata, and others. **Of these citronella and seedling Orange are to be preferred.**

In these parts, and in fact anywhere in the Murray Valley suitable for Orange culture, I certainly give citronella first place, because it is undoubtedly hardier, and also brings the tree to maturity more quickly.

Citronella must have good drainage, and although I have seen it doing apparently well in heavy soils on the Adelaide plains, it does not live long, and occasionally a tree will go off suddenly at an early age, on cold soils with indifferent drainage.

Seedling Orange is undoubtedly a good stock and one which grows better on cold sticky soil than citronella, but it is slow, and given the advantage of the good drainage we have in these parts, why not use the citronella in preference?

Next comes the planting.

There are two planting seasons, before and after winter; never attempt to shift Oranges during cold or wet weather.

When trees are planted in the autumn, there is a certain amount of warmth in the ground, root action begins quickly, plants revive after removal, and become firmly established before the advancement of winter, and, further, these trees are in a good position to stand up to the first hot spell in the coming summer. I may state here that although, generally, autumn planting is advantageous, yet it does occur sometimes that a late summer causes a late hardening of the young plant which renders it somewhat too tender for removal. Inquiries as to this should be made from the nurseryman, and if necessary, planting would be better left until the forthcoming September.

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On receipt of plants from the nursery, water them well over the leaves before removing them from the case. Plant at once of possible, but if not, place the trees in a shed sheltered from the wind until a more convenient time.

Great care must be taken to avoid damage to the young fibrous roots. These are all wanted, and neither must they be exposed to the air longer than is absolutely necessary.

Choose if possible, a moist or dull day for planting. Be careful not to plant the young trees too deeply. In some soils, this is a fruitful cause of a disease known as collar rot.

Remove one-half of the growth on the trees at the time of planting, the young roots cannot support so much at that time.

Oranges and Lemons should be planted from 20ft. to 24ft. apart each way. The Mandarin or Tangerine section being less robust in habit is spaced from 15ft. to 18ft. apart.

After the trees have been planted, **the soil must be kept thoroughly cultivated,** weeds kept down, and regularly worked for the first year.

The usual periods of **irrigations** which hold good in irrigation settlements are too far apart, and during a hot spell, young

trees suffer from drought

before the next water supply comes along. In this case use must be made of the water cart.

Young trees allowed to become over dry are in danger of becoming sunburnt and bark bound, which materially affects their future, if indeed it does not ruin them altogether.

For the first two years, the manures applied should be placed fairly close to the trees. After the trees are two years old, the manure can be either drilled or broadcasted down the rows. Superphosphate and bone dust are both excellent manures for young citrus trees, or a mixture of the two may be used. Dressings of 2 cwts. to 3 cwts. per acre are sufficient up to two to three year old trees. Apply bone dust in autumn, superphosphate in spring, and cultivate immediately afterwards.

An important point with newly planted trees is that of making a light mulch around the tree. This keeps off the direct rays of the sun, and retains the moisture for a much longer period. Stable manure, grass, or old straw can be used for this purpose. Stable manure, of course, brings best results because it adds a certain amount of nutriment to the soil.

At the end of the first year the appearance of the young tree will be more or less a bunch of short shoots from 12in. to 18in. long. Nothing very definite can be done at this stage in the way of **pruning,** but at the

end of the third year,

providing the tree has had fair treatment, many of the shoots should be anything from 2ft. to 5ft. in length, and from these the future tree has to be framed.

Select three strong shoots growing away in opposite directions if possible. These are to be the first mains, all other shoots must be cut back close into the stem, but do not entirely remove the leaves on the small remaining portion, **because** these help to provide shade from the sun.

The heads of citrus trees should always be trained low, so as to provide shade for the stems. These first main limbs must not be lost sight of, although it will be found that in after years, other mains will introduce themselves higher up as the tree grows, but with a definite framework to start on from the first set, it will be found much easier and more convenient to arrange those that come after in their proper places.

In conclusion, I must allude to one point, that is **never work a plough in the Orangery after the second year.** You cannot plough without injury to the roots. All the most important roots of the Orange are close to the surface, and if the plough is worked damage must be caused, which is bound to have its effect on the young trees."

The Dried Fruits Industry.

The Present Position and Future Prospects.

Mr. Chaffey Optimistic.

Public attention throughout Australia has been directed, through the press, to the position of the Dried Fruits industry, which is at present suffering from a greater production than can be profitably sold, whilst new areas to the extent of thousands of acres are annually coming into bearing.

In regard to the London market, where prices have recently dropped from 95/- a cwt. for Sultanas to 85/- and 80/-, and for Currants from 72/- to 62/- per- cwt. the opinion is held that prices will firm up again, especially as unseasonable weather has reduced the Smyrna crop.

Efforts are being made to arrange for securing preferential treatment in regard to supplies from Australia to the United Kingdom; this, however, is apparently more distant than the negotiations with Canada, by which it is hoped that Australian dried fruits will speedily enter the Dominion having a substantial preference over the Californian product.

Mr. W .B. Chaffey, President of the Australian Dried Fruits Association, has just returned from England, in which country he conducted, in conjunction with Messrs. MacDougall and Meares, an enquiry into methods for increasing the sale of Australian fruits in the United Kingdom.

Mr. Chaffey will have an interesting report to present to the Annual Conference of the A.D.F.A. in October.

Mr. Chaffey is convinced—

(1) That there is need for revising the method of arriving at dried fruit standard grades for the British market;

(2)That there is urgent necessity for preference from Great Britain, and

(3) That if the proposed reciprocal arrangements were completed between Australia and Canada, also with New Zealand, it would be a valued step towards securing the greatly-desired British preference.

As regards the quality of Australian Dried Fruits, Mr. Chaffey is emphatic on the point that quality of our product is unsurpassed; further, that this opinion was confirmed by leading men and experts in the trade in the old country.

Mr. Chaffey takes an optimistic view regarding the future of the Australian dried fruit industry, which he believes has a great future in front of it.

INTERESTING STATISTICS.

The following is an extract from Chamber of Commerce Journal, London, June 15th, 1923, sent by courtesy of the Commercial and Industrial Bureau of the Board of Trade, Melbourne:—

The imports of Raisins into the United Kingdom in 1922 amounted to 1,183,823 cwt., valued at £5,088,095, as compared with 728,147 cwt., valued at £3,671,447 in 1921.

Dried Currants were imported into the United Kingdom last year to the amount of 1,035,386 cwt., valued at £3,368,576, against 1,007,756 cwt., valued at £3,218,381, in 1921.

Australia's estimated dried fruit production for 1922 was 19,000 tons, 8,000 tons being available for export In the course of a few years it is believed that the population on the Murray River irrigation areas will approximate one million, and it is calculated that the production of dried fruits on these areas will reach 30,000 tons in 1925, with 17,000 tons available for export; and by 1927 it is believed that of the production of 53,000 tons, 39,000 tons could be shipped. Ex-service settlers are making a success of Raisin cultivation in these irrigated areas of the Commonwealth.

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Exports of dried Currants from the Commonwealth of Australia during 1921-22 amounted to 8,967,263 lbs., valued at £344,238, as compared with 5,994,325 lbs., valued at £208,743, in the previous fiscal year.

Raisins were shipped from Australia during the same periods to the amounts of 5,357,169 lb., and 4,115,503 lbs., the respective values being £184,111 and £165,465; while Sultanas exported totalled 7,836,880 lbs., valued at £366,095, as against 7,720,100 lbs., valued at £355,514 in 1920-21.

Shipments of Raisins from South Africa last year totalled 11,878,355 lbs., valued at £249,412, compared with 7,005,242 lbs., valued at £180,656 in 1921. Shipments of Raisins from Cyprus in 1921 amounted to approximately 35,000 cwt., valued at £42,000.

Dehydration of Fruit.

Vine Fruits and Prunes.

Additional Dehydrators are being installed in U.S.A.

As the quality of dehydrated fruit becomes better known consumers are more and more frequently demanding it from their retail grocers. Likewise, as the convenience and economy of the process become known to the fruitgrowers they are making use of community or privately owned dehydrators.

Last season many raisin Grapes were saved from consequences of too early showers by being shipped to the nearest dehydrator—in many cases a long shipment—but none the less it paid in results. This year more dehydrators have been and are being installed.

For several seasons, field investigations have been conducted by W. V. Cruess and A. W. Christie of the fruit products laboratory of the University of California the results being published in sundry bulletins.

As to results with Prunes:

Most Prunes removed from a dehydrator have a moisture content of 20 to 22 per cent., which gives a soft pliable product which keeps well, whereas sun dried Prunes are usually reduced to from 16 to 18 per cent. moisture. Carefully controlled tests have been made by Mr. Christie where the dehydrated fruit and the sun dried fruit have been reduced to the same moisture content and it was found that for every 2,000 pounds of dipped Prunes, dehydration yielded 1,012 pounds and sun drying 969 pounds. On an orchard producing 100 dry tons annually, this represents a gain of 4,300 pounds.

In addition to this large gain in weight the dehydrated Prunes graded 52 per pound as compared with 61 per pound of sun dried.

In addition dehydrated fruit is of excellent quality. It is free from dust or grit and is glossy and attractive. The flesh retains its light natural color if dehydrated properly and is free from any discoloration.

Then there is the great risk involved by sun drying. The drying season in any locality is seldom favored throughout with warm, dry weather. Too often in the latter part come cool, damp nights and often days which retard the drying and permit the Prunes to undergo a partial fermentation.

On the other hand if the dipped Prunes are placed in an efficient evaporator, after about 24 hours the uniformly dried fruits are removed, uninjured in any way, retaining all their original goodness minus the excess moisture, and properly cured. When dehydrated fruit is cooked its high quality is very evident. It more nearly resembles the fresh fruit in color and flavor.—"Californian Cultivator."

VICTORIA

Fruitgrowers' Conferences : State Advisory Board : Cold Storage : Central Executive : Berry Growers : Mildura Notes.

STATE FRUIT ADVISORY BOARD.

A meeting of the State Fruit Advisory Board, held at the office of the Assistant Minister for Agriculture (Mr. Pennington) on August 21st. Mr. Pennington presided at the opening of the meeting. The chair was subsequently taken by Sir John Taverner.

Fruit Marketing.—It was agreed that discussion on a report of a sub-committee appointed to deal with fruit marketing be deferred until a special meeting on Thursday, August 30th.

Mr. H. M. Wade said that the matter seemed to involve more than was at first thought, and it was desirable to hold another meeting of the sub-committee. One of the main causes of trouble in marketing was the receipt of poor and inferior fruit. Queensland acted rightly in forbidding the export of fruit of less than a certain value. Action on similar lines should be taken in Victoria.

Sir John Taverner said it was time that fruitgrowers organised as the wheat and wool growers had done. He suggested the calling of a special meeting, at which consideration could be given to the system suggested by the Queensland Producers' Association for reorganising the industry.

It was agreed that arrangements for dealing with next season's crops should also be discussed at the meeting.

Canned Fruits.—Speaking as a member of a sub-committee appointed to deal with sugar and processed fruit, Mr. W. J. Foster said that when the previous report was submitted sugar was at a higher price. The position had changed, and sugar was now much cheaper. In those circumstances the sub-committee felt that it would be useless to submit a report at this time. The present sugar agreement of two years' duration was based largely on the price of sugar. Since it was signed, the Premier of Queensland Mr. Theodore) had said that the Colonial Sugar Refining Co. Ltd. stated that, owing to the fall in prices which would occur in November, when the beet sugar was marketed, and later, when sugar from Cuba reached Australia, it would not undertake the financing of the Queensland sugar crop if the proposed embargo were rejected. Eighteen months ago Java sugar could have been purchased for £11 a ton and landed in Australia for £25 a ton. That left a margin of £20 a ton, which had to be borne by the fruitgrower. Fruitgrowers used 30,000 tons of sugar a year, and housewives 25,000 tons. The extra cost to the fruitgrower caused by the embargo was £1,000,000 a year. If it had been possible to import sugar, fruitgrowers would not have needed pools. The growers intended asking the Federal Ministry for assistance in handling canning fruits for the coming year.

The Minister for Customs (Mr. Austin Chapman) had said that no pool would be established, but a subsidy would be paid. To be of any value, the subsidy would need to approximate to the cost of production. That, last year, was £10 a ton. Growers intended to ask that the subsidy be paid on all canning fruit, whether it was used or not. The Ministry did not realise that two-thirds of the growers would suffer if a pool were not established. Growers could not produce fruit unless they were certain that they would be paid for the whole of it. The subsidy of £100,000 to be paid by the Ministry would be useless. The sum of £230,000 would be needed. The difficulty could be overcome by the factories agreeing to process the whole of the canning fruit grown in Australia, and the Ministry paying a subsidy on all of it. The obstacle was to persuade the factories to accept the financial responsibility of taking the whole of the crop.

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Eastern Trade.—Sir John Taverner raised the question of Eastern trade. He said that events relating to the subsidising of steamers were moving slowly. He assumed that the subsidy of £100,000, which, Mr. Chapman said, would be used for subsidising the industry and freights had some relation to Eastern trade. There were at present only irregular steamers, and an insufficiency of insulated freezing space.

Inspection Fees.—On the motion of Mr. Foster, seconded by Mr. V. R. McNab, it was decided to ask that the inspection fees on fruit be abolished and that the inspection be placed among the other duties ordinarily performed by the inspectors."

The senior fruit inspector of the Agricultural Department (Mr. E. E. Meeking) said that no profit was made by the department in charging the fees. The sum of about £2,000, which was collected each year, barely covered the expenses of inspection. Inspection was undertaken to protect growers against disease.

Mr. J. G. Aird's resignation as representative of the Central Fruitgrowers' Association was received and accepted.

COLD STORAGE CONFERENCE.

Fruitgrowers' Cool Stores Association of Victoria.

Annual Meeting.

Successful Gathering at Harcourt.

THE fifth annual meeting of the Fruitgrowers' Cool Stores Association of Victoria was held at Harcourt (Vic.) on 8th August, 1923. There were present: Messrs. J. Stevens, F. J. Garford, A. J. Harris, C. T. Browning (Blackburn); H. L. Tomkins, H. R. Chandler, J. Farrell, W. White, V. C. Swift (Croydon); P. Lawrey, R. M. Finlay, R. J. Lorimer (Diamond Creek); J. Stevens, T. N. Cuttle, W. Mock, A. R. Fankhauser (East Burwood); W. Johnston(Doncaster East); J. Tully, H. Petty, A. E. Tully (Doncaster West); J. J. Tully, R. E. Petty, Ed. Daws (Doncaster Central) J. H. Lang, E. Pritchard, Eb. Eagle, L. Abrecht, H. M. McLean (Harcourt); J. M. Watt, J. Hodgens (Hastings); G. Coleman, E. Street, J. Pepperell, W. Farquhar (Mt. Waverley); S. M. Holland (Red Hill); J. W. Barrett, P. T. Young (Ringwood); T. W. White (Somerville); R. Mair, L. Cole, J. H. Young (Tyabb); F. J. Byrne (Wantirna); also Messrs. W. Jenkins, E. I. Lawford, and Mr. D. B. Adam, B.Sc. (Dept. of Agriculture), and the Secretary, Mr. J. G. Aird.

Delegates were met on the arrival of the train at Harcourt by the directors of the Harcourt Cool Store. The roll was called, and delegates were introduced to their several Harcourt hosts. An inspection was then made of the Harcourt Cool Store by delegates. After commenting favourably on the up-to-date and efficient management of the store, an adjournment was made to the local hall, where a complimentary luncheon was tendered to delegates by the directors of the Harcourt Cool Stores. The president thanked Harcourt on behalf of delegates.

At the Conference, Mr. R. Mair presided.

Challenge Shield.—It was decided that Mr. P. T. Young and the Secretary be authorised to purchase the Cool Stores Challenge Shield on behalf of the Association.

The Secretary reported that the Minister for Labour had advised that a clause would be inserted in the Factories Bill to be presented to Parliament this session, giving relief to Fruit Cool Stores from the provisions of the Factory Engine Drivers' Board determination.

Directors were urged to interview the Member for their district requesting support to the measure.

New Members. — The following Stores were admitted as members of the Association—Doncaster West, J. W. Bailey, W. Lipscombe, Lawford's Fruit Exchange Pty. Ltd., W. Jenkins and Hurstbridge.

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G.N.R. Potato Market, King's Cross, N.1. Telegrams, "Kincrocost, London."
3-5 Pudding Lane, Monument, London, E.C., 3. Tel. Avenue 7990 Telegrams, "Fruits, London."
18 Stanley St., Liverpool. Tel. Central 888. Telegrams, "Geracost, Liverpool."
Southampton Docks (Facing No. 45 shed), Tel. Southampton 2207. Telegrams, "Geracost, Southampton."
Amercian Branch, 202-4 Franklin St., New York. Cables, "Geracost, New York."

Resolutions were adopted urging that quotations for ammonia be not limited as regards quantities; to support the request for the appointment by the Federal Government, of a competent refrigerating engineer at the International Cool Storage Conference in London in June, 1924.

Duty on Spraying Oil.—Resolved that the Tariff Board be approached requesting that the duty on spraying oils be withdrawn.

Food Values of Fruit.—Decided to request the Department of Agriculture to publish tables showing food values of such fruits as are usually held in cool store.

Cold Storage Experiments.—Mr. D. B. Adam, B.Sc., read an interesting paper on cold storage experiments, and Mr. Adam was accorded a vote of thanks. It was decided to request the Department of Agriculture to publish the paper in pamphlet form for distribution.

Papers were read on "Fruit Distribution," by Mr. S. M. Holland, and on "Cool Storage—a Prospect," by Mr. P. T. Young.

The Secretary's remuneration was fixed at £30 per annum.

Election of Officers.

Office-bearers were elected as follows: — President, Mr. R. Mair (Tyabb); Vice-President, Mr. R. M. Finlay (Diamond Creek); Auditor, Mr. J. W. Barrett (Ringwood); Council Member to Chamber of Agriculture, Mr. J. H. Lang (Harcourt); Council Member to Victorian Fruitgrowers' Central Association, Mr. P. T. Young (Ringwood); Secretary and Treasurer, Mr. J. G. Aird (Ringwood).

On 9th August, an inspection by delegates was made of the Granite Quarries, local orchards, Thompson's Foundry and Castlemaine Woollen Mills.

Votes of thanks were carried to the President and to the Harcourt directors for the excellent arrangements made.

VICTORIAN FRUITGROWERS' CENTRAL ASSOCIATION.

The quarterly Council meeting of the above Association was held on August 21. Mr. V. R. McNab in the chair. There were about 30 present, representing various affiliated associations.

1924 Convention.—It was decided that the invitation of the Shepparton Association to hold the next Convention in their district be accepted.

Superintendent of Horticulture.—It was decided in view of recent announcements that the resolution carried at the annual convention protesting against appointment of a man from outside the Commonwealth be again brought under the notice of the Minister of Agriculture, and that attention also be directed to the fact that the Minister had not conferred with the Committee appointed as promised.

Producers' Defence Fund.—A balance-sheet was tabled showing that there was a credit balance of approximately £2,447, the bulk of it being invested in War Loan bonds. This money was held by the trustees.

Mr. Lang moved that the Secretary to the Trustees of this fund be written to asking them that the expenses of the recent arbitration case affecting fruitgrowers be met from this fund. He thought that the expenses would be nearly £300. The motion was carried.

Vice-President's Resignation.—Mr. J. G. Aird tendered his resignation as Vice-President and representative on the State Advisory Board. It was decided to accept same with regret. Various speakers referred to the large amount of voluntary work Mr. Aird put in for the fruitgrowing industry. He would be a severe loss to the Association.

Mr. F. W. Vear was elected to fill the position of Vice-President. Mr. J. W. Bailey was elected representative to the State Advisory Board.

Sectional Committees.—Mr. J. H. Lang submitted proposals for the reorganisation of the Central Association and the appointment of Sectional Committee. His proposals provided for the appointment of sections for soft fruits, citrus, berry fruits, cool stores, fresh fruit exporters and metropolitan growers. Each section to meet and discuss separately matters affecting their particular interests.

Office-bearers to consist of President, two Vice-Presidents, Secretary and Treasurer, elected at Annual Convention and one representative of the

SWANN & CO.
Established 1822.
A century's experience in handling
FRUIT OF ALL DESCRIPTIONS
All Consignments for U.K. will have Personal Supervision and Attention
Account Sales and Cheques despatched immediately after sale.
3 SALTER'S HALL COURT,
London, E.C., England
Cables:—FIREBRICKS, LONDON
Bankers:—Bank of England.
Australian Representative
Chas. E. Howship, 129 Queen-st., Melbourne, and Surrey Chambers, Perth, W.A.
Victorian and Tasmanian Agents: Bailey, Baldwin Pty. Ltd., 552 Flinders Street, Melbourne.

J. G. MUMFORD
Est. 1906.
Fruit Merchant
Fruit and Vegetables sold for growers from all States.
Account Sales posted daily.
— *Exporter* —
Exporter of fruit to English and Continental markets.
449-451 Flinders Lane,
Fruit Exchange, Melb.
Reference—Satisfied Growers in all States.

above mentioned sections and such other sections as may be decided by the Annual Convention.

Fruit Pool.—Mr. Foster reported negotiations which were taking place between the Commonwealth Government in regard to a pool or subsidy for next year's canned fruits. This matter was referred to a sub-committee for further discussion.

Pear Shipments and Export.—It was decided to invite the Premier and Hon. A. E. Chandler ,M.L.C., who have just returned from a trip to Great Britain to attend the meeting of growers and exporters, which is to be held on September 26th, at 10.30 a.m.

MARGETSON
& CO. LTD.
Fruit Importers & Salesmen
30 James St. and James St. Warehouses,
11 Neil St.,
COVENT GARDEN
LONDON, W.C.
and at
Jamaica House,
9 & 10 Botolph Lane, London, E.C.
& 56-58 Stanley St., Liverpool
Sales by PRIVATE TREATY.
Prompt Returns & Settlements
Tel. Add.—FRUTERO, LONDON.
MARGETSON, LIVERPOOL.
Head Office—Covent Garden Market, London, W.C.
Bankers:
LLOYD'S BANK LIMITED
Law Courts Branch, Strand, London, W.C.
TASMANIAN AGENT
The Port Cygnet Fruitgrowers' Co-Operative Association Ltd., Cygnet

Open-Air Markets.—Mr. Aspinall stated that the Metropolitan Association was making application for a further grant of £150 to develop these markets. Last season, a lean year, they had sold 50,000 cases from 11 markets.

Mr. Tully said that they wanted the support of the Central as these open-air markets were for the sale of all fruits, not Apples alone. He moved that the application to the Treasurer for a further grant of £150 be supported by the Central. The motion was carried. Messrs. Vear and Burbury were appointed to confer with the Metropolitan Association.

Next Meeting.—September 25th, 10 a.m.

BERRY FRUIT DISTRIBUTION.

Government Bureau Requested.

It was evident at the recent Conference of berry-fruit growers at Lilydale (Vic.) that there was a regrettable lack of harmony amongst themselves. Feeling ran high at times.

One section has plans for establishing a depot and an organisation for distributing the fruit. In the light of last year's fiasco and the lack of definiteness on the part of the local Executive, the Conference refused to adopt any distributing scheme, and referred the proposals back to the Executive for further consideration.

The Silvan Fruitgrowers' Association has now approached the Housewives' Association suggesting the formation of a Government Fruit Bureau, on similar lines to the Labour Bureau and the Tourist Bureau: growers to register and pay certain fees and commissions: the bureau not to handle fruit, but would act as a clerical department for its distribution.

At the instance of Mrs. Glencross, a resolution was adopted by the Housewives' Association agreeing to a Conference on the subject between fruitgrowers and the Executive of the Association, a member of the State Government to be interviewed re the establishment of the Bureau.

MILDURA.

(By Our Travelling Representative.)

The history of the Mildura irrigation settlement is an interesting one. The site was one of the oldest cattle runs on the Murray. Kulkyne, Cowarp, Mildura and Kulnine were all "taken up" in 1846, five years before Victoria was declared an independent colony. Before the arrival of the rabbits, this country was considered the best lambing run on the Murray. It was about 1884 that the Messrs. Chaffey Bros. arrived from California, and in August, 1887, by arrangement with the Government, entered into possession, under certain conditions, of 50,000 acres on the lower Murray, with the right to purchase the adjoining land to the extent of 200,000 acres at 20/- per acre. The conditions were that in addition to establishing an irrigation settlement they were to effect useful and permanent improvement in the way of irrigation channels, pumping machinery, roads, bridges, etc., to the extent of £300,000 in 20 years. They were also to erect a college and establish fruit packing sheds and canning factories. In the event of this taking up the remaining 200,000 acres they were to effect improvements to the value of £220,000. All conditions were carried out within the stipulated time.

The Chaffey Bros. immediately got to work. Surveyors set out the boundary lines of the blocks, the streets and the avenues, and indicated the contours which the channels must follow. Clearing, fencing, cultivating and planting followed.

A big advertising scheme had been launched, which soon brought settlers from not only all over Australia, but also from the United Kingdom and India. Since then additional areas have been planted; Red Cliffs being the latest addition.

The Mildura district comprises Mildura, Merbein, Irymple, Koolong, and Red Cliffs. Distilleries and packing sheds, co-operative and privately-

FRUIT TREES
One or One Million Supplied
W. G. GRAY
Allwood Nurseries
Hurstbridge, Vic.
Write for Catalogue
Post Free.

COVENT GARDEN, LONDON
Ridley, Houlding & CO.,
Large Receivers of Australian Fruits.
Solicit Consignments of
Apples, Pears, &c,.
Best market prices and prompt account sales returned.
Correspondence invited.
Representative in Victoria
THE
International Fruit & Mercantile Co.,
410 Flinders Lane, Melbourne
MURDOCH BROS., Hobart

owned, are distributed throughout the various centres through which most of the fruit passes.

The 1920-21 and 1921-22 seasons were bad ones, owing to heavy rains in 1920-21, and the ravages of Black Spot and Downy Mildew in 1921-22. The 1922-23 crop was a good one, however, and realised fair prices. The estimated output for 1922-23 is as follows:—

Currants	4,766 tons
Sultanas	10,039 „
Lexias..	3,034 „

Ohanez Grapes realised good prices on the English market this year. The

Doradillo crop this year was the biggest yet known in the district.

Cotton growing is in the experimental stage, but some very fine samples have been produced at Merbein, and the opinion is that the soil and climate are very suitable for the growing of this valuable commodity.

T. STOTT & SONS

Fruit Merchants

Established 1882

A Trial Consignment solicited from Growers in all States.

Prompt Settlement.

11 WESTERN MARKET, Melbourne

TASMANIA

We are the Leading Australian Firm of FRESH FRUIT EXPORTERS, JAM MANUFACTURERS (IXL Brand), FRUIT CANNERS, HOP FACTORS (owning the largest cool stores for this purpose in the Commonwealth).
Supplies of Corrugated Strawboard, Genuine Sulphite Paper, Nails and best Packing Materials available at all times.
Sole Distributing Agents for the Southern Tasmanian Associated Manufacturers of Evaporated (dried) Apples.
Agents for—
Federal Steam Navigation Co. Ltd., Scottish Shire Line of Steamers, Osaka Shosen Kaisha, London Assurance Corporation.
Correspondence Invited.

H. JONES & CO. LTD.,
HOBART

Fruit Shipments
LONDON
Liverpool and the Continent

W. D. PEACOCK & CO.

24 Martin Lane, Cannon St. LONDON, E.C., 4
AND HOBART, TASMANIA
Solicit Consignments

The High Standing and Long Experience of this Firm is a Guarantee that the Best Interests of Consignors will be conserved.

Bookkeeping and Income Tax.—Save yourself hours of needless worry. It's all worked out for you in the Fruit World Annual (bound in stiff covers). Worth £2/2/-: Price, 3/- post free from the Fruit World, 9 Queen-street, Melbourne (Vic.).

NATIONAL ADVISORY FRUIT COUNCIL.

Growers in Conference.

Commonwealth Fruit Pool Refused, Though Substantial Subsidy Promised.

THE third meeting of the National Advisory Fruit Council was held at Melbourne on Aug 7th and 8th. Mr. W. J. Foster (Vic.) presided.

The Minister for Trade and Customs (Hon. Austin Chapman) in opening the Conference, stated that the Cabinet had decided not to form another fruit pool this season. Business matters must be left to business men. The duty of the Government was to govern, not to trade. The three fruit pools had lost £500,000. The formation of another pool would only postpone the evil day. In view of the present difficulties the Government would grant a liberal subsidy to growers.

Mr. J. P. Piggott (Tas.) contended that money had not been lost under the pooling system; it had gone into wages and for general materials, and finally the taxpayers were getting cheap food in the form of canned fruit. Again, the standard of the pack had been raised. The supposed loss, however, was tiny as compared with the annually recurring losses incurred supporting the sugar industry. The pooling system was the only possible solution of the present problem.

Mr. W. Ranger (Q'land.) said that the State and Federal Governments had encouraged many men, including large numbers of returned soldiers, to embark in the fruitgrowing industry, whilst no foresight had been shown in preparing markets.

Mr. B. Cook (Vic.) said the citrus industry needed assistance in the matter of freight reduction. South Africa was a keen competitor with citrus on the London market. With subsidised shipping it cost South African growers 1/2 per case sea freight to England: the cost to the Australian grower was 7/6.

A committee was formed to draft a plant to submit to the Minister.

Resuming next day, the Committee reported they could see no solution other than the formation of a pool on the present lines.

Council Finance. Mr. E. J. Mulvaney said the cost of the Meat Board, allowing for a first-class secretary, rent, and incidentals, amounted to £3,000 to £4,000 per annum.

A sub-committee was appointed to deal with finance and report to next meeting.

Dried Fruits Trade. Mr. Sumner moved that the State Governments be requested to introduce legislation providing that dried fruit for consumption within the Commonwealth should be subject to the same regulations as that for export, and that all packing should be open for inspection. He said that much inferior dried fruit was being put on the market, particularly in Currants: this was detrimental to trade: the small private packer was the worst offender.

Mr. Such (N.S.W.) dissented: he said there was much ungraded fruit being sold at nearly the price of the graded. There were still many growers not connected with the A.D.F.A.

The motion was carried.

Freight reduction essential. The necessity for reduction of freight in interstate and overseas trade was emphasized.

It was decided to ask the State Boards to approach the State Governments with a view to obtaining a reduction in the cost of fruit transport on railways and interstate steamers.

Immature Citrus. It was decided, at the instance of Mr. Such, to ask the State Governments to enact legislation prohibiting the sale of dry or immature citrus fruit.

Rebate of duty on case timber. On Mr. Sumner's motion, it was decided to request the Federal Government to grant a rebate on the duty on imported timber for fruit cases which were used for export purposes.

The Fruit World Annual should be in the hands of every thoughtful grower. The Annual contains a complete statistical review of the fruit industries of Australia and New Zealand, as well as a complete statement of the irrigation programmes of the States of South Australia, Victoria and New South Wales.

There are practical hints (illustrated) relating to various phases of orchard and vineyard work. A valuable spraying guide (illustrated) dealing with orchard and vineyard pests, and remedies therefor.

A full statement is presented of all the fruit which enters Great Britain, including the proportion sent by Australia.

Readers are enthusiastic concerning the value of the Annual. It is bound in stiff covers for a ready reference.

Not the least of the feature of importance are the pages devoted to a complete yet concise system of bookkeeping, together with simple hints relating to the compilation of income tax returns. Worth £2/2/-. Price, 3/- post free in Australia and New Zealand. (9 Queen-street, Melbourne, Vic.).

Fruitgrowers

visiting the

Royal Show

should not fail to call at the

Australian
Sulphate of Ammonia
Propaganda Committee's
Stand

(Nos. 18 and 19,
Hall of Manufactures)

and learn all about

SULPHATE
OF
AMMONIA

(The Fertiliser Richest in Nitrogen)

Write for Handbook, "Productive Fertilisers," to the Australian Sulphate of Ammonia Propaganda Committee, 360 Collins Street, Melbourne.

Power on the Orchard and Farm.

The Modern Tractor is a boon to the man on the land. The Case Kerosene Tractor, Combines Efficiency : Durability : Convenience.

ONE of the biggest factors in connection with the development of primary production in all parts of the world is the extra power given and the enormous saving of time and labour afforded by the motor tractor.

Modern farm implements, horse drawn have done much to increase the fertility and productiveness of the orchard and farm, but the scarcity of labour and the high price of horses and fodder have compelled the man on the land to look for some other method of further increasing production. The tractor thus supplies a pressing need, which fact is evidenced bv the prominent growers purchasing tractors. Fruitgrowers who possess tractors have been interviewed, and they declare that the investment is a sound one, and that the tractor is labor saving, efficient and a real money-saver.

"Case" has become a household world throughout the Agricultural districts of the Commonwealth, and fruitgrowers and farmer now recognise that the word Case, when applied to power farming machinery, represents a high quality product. This reputation is not by any means confined to Australia as Case Kerosene Tractors are at present being operated in over 100 different countries, and are everywhere giving the utmost satisfaction.

The **Case Tractor** is manufactured at Racine, Wisconsin, U.S.A., by the J. I. Case Threshing Machine Company, which has been established for a period of over 80 years, their main plant covering 140 acres. The J.I.Case T.M. Co. are known to be the largest makers of quality Tractors and Threshing Machines in the world. They built their first tractor in 1878, and their first Internal combustion Tractor in 1892. Briefly, their complete list of machinery is as follows: —Case Kerosene Tractors, in four sizes; Case Steam Tractors, in five sizes; Case Steelbuilt Threshing Machines, in seven sizes; Case Silo Fillers, in four sizes; Case Baling Presses, in two sizes; Case Grand Detour Plows and Disc Harrows each made in five sizes; Case Road-Building Machinery, including Steam Road Rollers and Case Six-Cylinder Motor Cars.

The Case Tractor is made in four sizes. The 12/20 is equal to 8 or 9 strong horses, the 15/27 equal to 12 horses, and 22/40 which will do the work of 18 to 20 horses. The smaller machine, 12/20, is of the same sturdy construction as the two larger models, and has been found most suitable for orchard and vineyard work or the small farm where less power is needed.

Exclusive Features.

Many exclusive features of advanced tractor design have been developed and embodied in the Case, which is of very rigid construction, the frames of the 12/20 and 15/27 models being one piece, semi-steel castings and are so designed that in addition to acting as main frame, thev also form the main part of the transmission case, crank case, and rear axle housing. This construction allows all the bearing seats for engine crank shaft, transmission shafts and rear axle to be machined at one setting, resulting in accuracy of shaft alignment and great strength.

In all models of **Case Tractors** the engine is of the overhead valve, four cylinder vertical type. The motor is placed transversely on the frame, so that spur gears may be used throughout, and to make it possible to place the belt pulley on the crank shaft, thus doing away with loss of power as is the case when the belt pulley is operated through gears. The pulley is in plain view of the operator when lining up a machine. There is perfect accessibility to all engine parts —a great convenience when inspection and cleaning are necessary.

Case lubrication is of the force-fed type in all models, resulting in economy of oil and long life of wearing parts.

The **carburettor** fitted to the Case is simplicity itself, and in conjunction with the efficient vaporiser assures the greatest fuel economy. Case Tractors work continuously on kerosene, and develop full horsepower economically and without overheating.

The cylinder barrels of the Case are easily removable, so that in case or wear or careless handling, they can be replaced readily.

Power is transmitted from the engine crankshaft to BOTH drive wheels with minimum loss through a train of cut steel, hardened spur gears running in oil. The gear shafts run in large Hyatt roller bearings, so that the friction loss is slight. Bearings are contained in the frame casting, making it impossible for them to get out of line. The transmission cover can be readily removed, giving access to transmission. The Case Crankshaft is made extra large to resist any tendency to spring under heavy working stresses. Bearings are of special construction and of great strength, a feature, which in conjunction with force lubrication, means great durability and smooth running.

The Commonwealth Agricultural Service Engineers Ltd., Morphett-street, Adelaide, S.A., with branches in all the States, are the sole agents in Australia for Case tractors and machinery. The Victorian branch is at corner of King and Flinders sts., Melbourne.

The Company provides excellent service stations in convenient centres for all Case Tractor users, and are constantly developing this side of their activities. The service engineers being ably supported by the well-equipped engineering department at Waymouth-street, Adelaide.

Two women operate with ease a CASE Kerosene Tractor under heavy conditions at Edmonton (Q'ld): grade 1 in 3; ground covered with tall rank growth. Since taking photo. a Grand Detour plough purchased enabling operator to control both tractor and plough from the tractor seat.

Visitors to the Adelaide Royal Show, which is to be held September 11th to 15th, will have every opportunity of inspecting the various models of the Case Tractor which will be on view near the Frome Road gate, at the south-eastern corner of the oval at the Show.

Case Tractors will also be exhibited and working demonstrations given at the Melbourne Royal Show, September 20th to 29th at 189b Skene-street.

Visitors are cordially invited to inspect.

A World Wide Organisation

HENRY FORD'S HUGE ENGINEERING ACTIVITIES

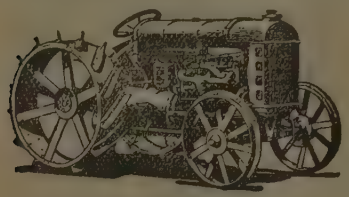
Fordson Tractors, Ford Motor Trucks and Cars have won the whole world's approval

A GREAT enterprise, operating on expansive lines, and efficiently administered always commands respect.

This is especially true when such an organisation studies its clients or customers to such an extent as to supply goods of high quality at minimum prices.

Thus it has come about that Henry Ford's huge engineering enterprise at Ontario, Canada, has won the admiration of the whole world.

Here are a few astounding figures: The Ford works at Ontario, Canada, cover 305 acres.



"Fordson" Tractor

There are over 50,000 workmen employed there.

There are over 5,000,000 Ford car owners in the world.

Every second car on the roads is a Ford.

In Australia a new Ford is placed on the road every 20 minutes.

In Victoria alone over £2,000,000 is invested in Ford Service Stations.

There are 15,000 people in Victoria alone directly employed in various ways on Ford cars.

Now as regards the fruitgrower, there are three sections of Henry Ford's great organisation which intimately touch his life and business. They are the Fordson Tractor, the Ford Car and the Ford Motor Truck.

The Fordson Tractor—is proving one of the biggest factors in making work on the orchard and farm more congenial. It has proved its usefulness not only in respect to ploughing and cultivating, but also for general power purposes. The Fordson has proved itself under all conditions in Australia to be efficient, reliable and economical.

On the land it will do the work of six horses, from ploughing to harvesting. On the road it will haul from four to five tons.

As a stationary engine it will drive a thresher and double-bagger chaff-cutter, and all of the many jobs that a engine can be used for.

The simplicity of design and accessibility of all parts makes it a machine which can be easly handled and quickly understood. The fuel consumption varies according to conditions. — For ploughing, approximately 1 gallon to 1¼ gallons of kerosene per acre. The amount of ground ploughed also varies under different conditions, the average being approximately one acre per hour. For cultivating, harrowing or harvesting, owing to a wider cut, the fuel consumption would be very much less.

The Fordson costs less than a six-horse team and harness, it will do all that they can do as well as belt work. In an emergency the limit of a day's work for a horse is its endurance—for a Fordson 24 hours. In a slack time there are no maintenance costs with a Fordson—the horse eats all the year round.

All the moving parts are enclosed and thoroughly lubricated. All wearing parts are readily accessible. Adjustments and repairs are easily made. Spare parts are always obobtainable.

The tractor is set low, and has a short turning radius, which enables it to move around amongst the trees freely, and the operator to keep clear of the branches, and yet work his tillage implements close up to the butts of the trees. The tractor is simple to operate, and at a recent demonstration the machine, with a disc plough attached, was operated by a lady.

Ford Motor Truck

The Ford Motor Truck is also fulfilling a long-felt want on the orchard and farm. Motor transport has practically replaced the slow and expensive horse waggon. In addition to saving time for the grower close to the city, it enables the distant grower also to market his fruit quickly and economically.

The motor truck does the work of three teams hauling on the road, thus saving the wages of two drivers, the cost of three teams, their feeding and equipment. The Ford one-ton truck renders excellent service in this connection.

The list of appreciative users of the Ford Motor Truck is a long one. The following is typical of many from country purchasers—"I purchased two Ford one-ton trucks, and am convinced that there is not a better truck for transport of goods over bad roads such as we have in Gippsland."

The latest improvements on the new Model Ford one-ton truck have made it a complete and up-to-date equipment. Recent reductions in price have also placed it well within the reach of all.

Ford Motor Cars.—The benefit that Australia reaps economically and socially from the Ford car is realised by very few. Accepting this fact as a matter of course, that every second car on the road is a Ford, very few think of the immense amount of Australian capital, labour and material involved.

Ford.—The Universal Car, depends on absolute accuracy in the manufacture of each individual part that goes into Ford products. Each part, whether it is made of steel, cloth or rubber, must conform to definite specifications in both minute measurements and standard quality. A staff of expert chemists and metallurgists, working with modern equipment, testing devices and elaborate machinery, provides those specifications.

The Ford Car has been the pioneer in opening new country, and, together with the Ford Truck and Tractor, has rapidly become a valuable asset to the man on the land.

Purchasers of Ford products should always bear in mind that in addition to the actual machine purchased, they also have the benefit of the Ford Service Stations, situated all over the States.

There will be displays of Fordson tractors, Ford motor trucks and cars at the Royal Agricultural Show to be held at Melbourne, September 20th to 29th. The demonstration is worthy of close and earnest inspection. Visitors to the city are also invited to attend the showrooms of the Ford factory distributors, Tarrant Motors Pty. Ltd., 150-158 Lonsdale-street, Melbourne.—(Advt.)

Tree and Stump Pulling.

Valuable Labor Saving Devices for the Orchardist and Farmer.
Trewhella Bros. Implements Solve Your Clearing Problems.

AUSTRALIA'S name stands favourably in the world's notice to-day in regard to many activities of human interest.

For prowess in manly feats of strength in war and peace the name of Australia will never be forgotten: fresh laurels are being won by our scientists, engineers and athletes every day.

In the realm of mechanics there is one outstanding example of an Australian invention having won its way by sheer merit into widely scattered portions of the world.

By reason of their power, efficiency and economy the tree and stump pulling devices of Trewhella manufacture are largely used throughout Australia and New Zealand as well as in England, Scotland, Ireland, Europe, Canada, United States of America, Africa, the East Indies and elsewhere. This is surely a tribute to the value of the implements themselves, and a good advertisement for Australia.

In an orchard in Western Australia it was recently noted that several stumps of old gum trees were still standing. In response to an enquiry the grower said it would not pay to shift the stumps. Apart, however, from their inconvenience and hindrance to cultivation, picking, and carting, there must be added the cost in damaged implements and the fact that such stumps harbour many pests. The fact is that it would have paid that grower many times over to have pulled the old tree stumps out instead of letting them remain to take up valuable space year after year.

In designing implements for use by fruitgrowers, farmers and contractors, Messrs. Trewhella Bros. have succeeded in producing such as are adapted to their particular needs.

The names "Monkey" and "Wallaby" as applied to Messrs. Trewhella Bros.' Grubbers and Jacks are registered as trade designations.

A Valuable List.

"Wallaby" Jacks are those designed for 2½-ton, 4-ton and 6-ton lifts. They are variously suited for log-rolling, clearing land, etc.

"Monkey" Jacks include the 8-ton and 10-ton class: the former are extremely useful for grubbing roots and stumps, whilst the latter, which embodies all the good features of the previous Jacks with a number of improvements, is widely known as the "King" of grubbing jacks.

A well-known New South Wales fruitgrower (Mr. R. Sim, of Capertee) in an appreciative letter, summarises the position thus—"I pulled a large stump and pushed down four trees (largest 2 feet 6 inches through) in an hour and a half with the Jack."

The "Monkey" grubber deserves special mention. With the aid of this implement a man is able to do clearing work quicker than with the Jacks, thus saving much grubbing and root cutting. Its best work can be done when the ground is soft or too wet to use a jack or similar implement. In addition to its capacity to pull almost any tree or stump, the "Monkey" grubber can be used as a winch for many purposes.

Interesting Details.

Having given a summary of the useful implements manufactured by Messrs. Trewhella Bros. it will be of interest and value to give some additional details relating to their construction and method of operation

The Trewhella "Monkey" Grubber.

Much time, thought and experiment have been devoted to perfecting this machine, and its equipment of Snatch Block, Grab and Rope attachments, making all the details as simple and convenient as is consistent with strength, to stand the severe strains such as a machine is subjected to.

There are no difficulties in removing trees and stumps when using a "Monkey" Grubber.

The **"Monkey" Grubber** is worked by hand power, the sector bearing ratchet gear applied to a steel winding drum allows the operator to develop 260 times his own strength. The machine is very compact, and is run to the job like a barn truck, or in rough broken country is easily carried by two men.

Gearing is automatically controlled so that it matters not in what position the machine is placed it will work equally well. So long as there is a place for a firm footing and room to extend the arms forward the "Monkey" Grubber develops its power. A fast speed for light pulling and taking up slack is provided while the equipment is very complete, 185 feet of British steel cable fitted with simple hook and loop couplings that are coupled in a moment. Sturdy Snatch Block and Rope Shortener are included in this complete grubbing equipment.

A noticeable feature is the absence of splices, loose pins and shackles. These had been eliminated because splices difficult to make under ideal conditions would be almost, if not wholly, impossible where these machines are popular—simple hook and bands with taper wedges are fitted to the rope ends, they can be put on without tools, and in much less time than it takes to make a splice. Also they have the advantage of being always on the rope while shackles and pins are easily lost.

An appreciative user, Mr. McHugh, of Longwarry, Victoria, writes:—

"The 'Monkey' Grubber is giving complete satisfaction, and has pulled stumps over three feet in diameter without any assistance. Besides other advantages, it can be more quickly operated, doing its work in quicker time than any other machine we know of. It has lightness combined with strength, and the fact of it having such a short lever (only five feet) enables it to be easily worked in any class of country."

Another satisfied customer (Mr. J. Kadwell, of Crookwell, N.S.W.), puts it this way—"I can do as much in one hour with the 'Monkey' Grubber as two men could do in a day without it."

The Trewhella Root Hook.

For grubbing stumps which are too low in the ground for the rope to be fastened around, a special Root Hook has been designed. In operation the hook is set in position on top of the stump with the points gripping it at the back, and the pull rope attached to the loop on the hook. The strain is then put on the machine in the usual way, with the result that the root can be effectively pulled.

This Root Hook is entirely successful when dealing with the burnt-out stumps, short stumps, roots and saplings.

A full range of these implements and, in addition, wood-cased Jacks. sheave blocks for sawmillers, bearings for timber trucks, railway track Jacks, will be shown at the firm's stand at 91 Smith-street, Show Grounds, at the forthcoming Roval Agricultural Show.—Advt.

Successful Orchard and Vineyard Spraying

A DURABLE AND EFFICIENT MOTOR PUMP IS ESSENTIAL.

The POWER "BAVE-U" Still Retains Pride of Place.

NEW IDEAS, like some seeds, take a long time to germinate. For instance, the Australian native Wattle seeds need boiling before they will germinate, or they grow well in the bush after a roasting bush fire. We hasten to add, however, that it is not suggested that some fruitgrowers need boiling or roasting before they adopt a new idea. Oh, dear, no!

Now, as regards spraying fruit trees and vines, there is not a man who has any doubt about the necessity for spraying. Once it was a "new idea," but it came and it stayed, and it will remain as long as there is a pest to fight. But as to what to spray with? The remedies are well known, and need only elbow grease and some horse sense to be effective, if——

If what? If the right kind of pump be used, of course.

Once power spraying was another of those "new ideas." Previously growers even on large areas had only hand power to depend on for working the pumps.

Now, hey, presto! give the wheel a turn, start the engine, and everything works smoothly—if——

Confound it all, another if? Of course. Success in spraying is assured if you use a Bave-U power pump.

The Bave-U Power Sprayer was the first Power Sprayer to be used in Victoria if not in the whole of Australia. It owes its existence to the foresight of the late Mr. Tom Petty, of Doncaster, Victoria, who in 1908 commissioned Mr. J. Russell to build him a Spray Pump worked by motor power which was then only being introduced to Australia. Up till that time all spraying had to be done by hand.

This power sprayer was composed of a 4 h.p. petrol engine, taken from a motor bicycle and short stroke pump, and was used on Mr. Petty's homestead orchard, "Bay View," from which the pump got its name.

The next purchaser of one of these sprayers in the same year was Mr. E. Stocks, of Drouin. The maker had, however, by this time concluded that a water-cooled engine was necessary. Within a few days of Mr. Stock's purchase, Mr. W. Farquhar, of Mt. Waverly, and the late Mr. M. Muir, of Glen Waverley, gave their order. Amongst the other early users of the Bave-U Power Spray were Messrs. F. Finger and Mr. B. Zander, of Doncaster; Mr. Jas. Lang, and Mr. J. B. Warren, of Harcourt; Mr. T. H. Grant, Pakenham; Mr. H. H. Hatfield, Box Hill; Messrs. John and George Petty, of Doncaster. The amount asked for a Sprayer at that time, £75, was considered an outrageous sum, but Mr. Russell relates that growers always paid cash, and nearly always in sovereigns! Alas, for those days!!

The motor pump, however, from the start more than held its own. It was found that besides the great saving in time, the work was done infinitely better, at a fraction of the cost, both for labour and material.

A section of workshop of Russell & Co., manufacturers of Bave-U Pumps, at Box Hill, Vic.

At the time that the Bave-U was first introduced there was, it is safe to say, not one orchardist who had even the remotest idea of the working of a petrol engine. Mr. Russell states he had a very strenuous time rushing to all points of the compass whenever any little trouble occurred. It was not without its humorous side, however one grower driving a new pump back 13 miles to the workshop after spraying a few barrels perfectly, only to find he had no petrol in the tank. Another gentleman pulled his whole pump to pieces, and in the end discovered the reason it would not pump was that the vat was empty. To-day everybody knows or has somebody near him who knows something about "motors," and it is a rare thing for the factory to be asked to send a man out. A second visit at any rate is seldom necessary.

The Bave-U is to-day reckoned to be one of the leading sprayers on the markets of the world. It is known all over Australasia and New Zealand, in South Africa, Java and even South America.

A grower, when planting an orchard, looks ahead. But first of all he plants the right varieties; they are the foundation of the orchard. Just so; and when securing a motor pump be sure and secure the right "variety," viz., the Bave-U. It is the foundation of successful spraying.

Its outstanding features are sturdiness and simplicity of construction, and gives a high steady pressure. The fact that Bave-U Sprayers made in 1908 are still working well, gives some idea of their durability.

The machine is mounted on either ordinary two-wheeled spring transport, 2-wheeled perfect balance transport, or four-wheeled steel transport with U vat, as illustrated. —

Messrs. Russell & Co. also make a strong serviceable hand pump.

At the Royal Melbourne Show an exhibit will be on the usual stand in Smith-street. A catalogue will be sent free to readers not visiting the Show on request.—Advt.

The Cold Storage of Fruit

PRIVATELY OWNED STORES A SUCCESS

A Review of the operations of R. Werner & Co.

IN the light of knowledge of the present day it is impossible for any grower to deny the advantage of cool storage for his fruit.

Most of the Apple and Pear growing districts have, within comfortable radius, a cool store of some kind, yet there are orchards to be found situated where the distance and regulations in force cause the grower some personal inconvenience.

Where a grower is operating with his own family as helpers, the advantage of having a cool store of his own must be quite apparent. Fruit can be picked and stored to his own particular fancy, and when the time comes for grading and repacking for the market, the time saved in journeying to and fro will be considerable and the transport costs also reduced. Fruit can be picked and stacked overnight and placed in the store in the cool of the morning.

These small stores of 2,000 to 10,000 cases can be operated at a very low cost per case, as the plant can be run without the services of an engineer.

The direct expansion system is installed in these stores and on actual tests using a kerosene engine for power, with kerosene at 18/- per case the season's cost for fuel and lubricating oil came out at a little under ¾d. a case per month.

After allowing for depreciation and interest on the capital and outlay, it compares very favourably with the co-operative stores. In addition, the added conveniences and saving of transport and time render the small store a very attractive proposition.

There is nothing fixed in regard to layout of buildings, etc.; in fact, very often the existing sheds, etc., can be worked in.

R. Werner & Co. Pty. Ltd. have installed machinery or carried out the whole job for a number of stores of 2,000 to 12,000 cases, and figures prove conclusively the soundness of the proposition.

Citrus Fruits.

The ever-increasing scope of mechanical refrigeration is now extending to the citrus and dried fruit industries. The citrus industry is rapidly expanding, and with the increased areas coming into bearing annually, cool storage will be necessary in order to prolong the season and prevent gluts, thus stabilising the market for the grower and ensuring a continuous supply to the consumer.

Dried Fruits.

It is now also well known that dried fruits can be kept free from the ravages of the grub and a bright, attractive condition maintained by prudent use of cold storage.

Canning factories could also smooth out the peak loading of their equipment, and so reduce the number of the canning machines by the use of a cold store. The refrigerating machinery for such a store could no doubt be put to useful work, such as ice making, for the remainder of the year.

R. Werner & Co. will gladly give estimates for machinery only or complete plants to any one contemplating an installation and will at all times be pleased to discuss the various problems that arise in connection with all matters of cold storage.

Recent statistics shows that cool stores have, during the past few years, been constructed with capacities as follows:—

Victoria	1,250,000
Sth. Australia ..	370,000
New Zealand ..	370,000
Tasmania..	170,000
New South Wales	80,000
W. Australia . ..	45,000
	2,285,000

It is freely admitted that the development of cold storage has been one of the greatest factors in stabilising the fruit markets. The direct financial benefits of cold storage are such that growers in districts as yet possessing no cold store will find it to their advantage to take the necessary steps to remedy this defect.

Co-operative Cool Store at Gumeracha, S. Australia. Refrigerating machinery supplied by R. Werner & Co. Pty. Ltd.

The Royal Agricultural Show.—An instructive display of cold storage installation will be operated at the Royal Agricultural Show, Melbourne, September 20th to 29th, under the pavilion of the Department of Agriculture's exhibit, and also at Messrs. Werner's exhibit in the same pavilion as J. S. Corden Ltd., in the Show Grounds, at the corner of McCracken-avenue and Lobb-street.

A cordial invitation is extended to all interested to visit this exhibit, when enquiries will be gladly answered.

R. Werner & Co.'s works are at Burnley-st., Richmond (Vic.).—Advt.

Fighting the Codlin Grub and Leaf-eating Insects.

Absolute Success is possible.

"Swift's" Arsenate of Lead is increasing in popularity.

SPRINGTIME is that happy period of the year when leaves and buds expand on deciduous trees, and when Nature's sap flows freely after its winter rest.

But whilst the poet's fancy has full flight in the sunny days of spring, and whilst the thoughts of the ladies yearn for new frocks and hats, there are very real and practical duties which must be performed by the fruitgrower.

Springtime is all very well for poetical fancies, but it also brings to life the moths, aphis and other pests which were dormant during winter.

To effectively cope with these pests the grower must call to his assistance all the aids of which he is aware. In this eternal warfare against plant pests the grower is not fighting a lonely battle against unequal odds. He knows of a certainty the strength of his foes and the strength of the forces at his command to oppose and vanquish them.

In dealing with the persistent Codlin Moth there is one unfailing remedy that is spoken of in a general way as Arsenate of Lead. But just as the grower is a specialist in the matter of varieties of fruits, equally so he specialises in regard to the particular brand of Arsenate of Lead which he proposes to use.

Years ago the fight against Codlin Moth was an unequal one, and when "King Codlin" as he was then called), held sway, the fruitgrowing industry was in jeopardy—that is, particularly as regards the production of Apples and Pears. Then it was that American scientists gave to Australia a sure specific in the form of Swift's Arsenate of Lead, a high quality of effective article which came as the saviour of the Australian Apple and Pear industry, and has remained as the standard of quality ever since. America also gave to Australia such Apples as Jonathan, Delicious, Rome Beauty and many others, as well as the Washington Navel and other citrus, besides many splendid varieties of other fruits.

Thus it is that a valuable discovery, whether it be a new fruit variety, or an effective instrument or spray against fruit pests, or a scientific discovery—it belongs to the civilised world as much as it belongs to the country or centre from which it originated.

Swift's Arsenate of Lead stands in the category of valuable discoveries which have benefited primary producers, particularly fruitgrowers.

It speaks volumes for this popular —and increasingly popular—brand that its quality has not varied. And as regards it being of "standard of quality" it works this way—

"Is it as good as Swift's?" asks the grower.

"Yes, here is the analysis," is the answer.

"Well," responds the grower, "I don't know, but there's something beyond analysis: it's a blending of the different compounds, a fineness which does not clog to nozzles, an adhesiveness which enables it to stick to the leaves, a general consistency and effectiveness which make me stick to the brand that's stuck to me for so long."

A fairly satisfactory gauge of the popularity of Swift's Arsenate of Lead is the fact that since its introduction there has been a steadily increasing demand throughout Australia and New Zealand.

Its arsenical strength and killing power, as well as its capacity for suspension (as will be noted from Government analyses) are so accurately blended as to eliminate all danger of burning even the tenderest foliage, whilst being foremost as a spray for effectively checking leaf-eating pests.

It is the quality of adhesiveness for which many experienced growers give "Swift's" especial praise. Once it has time to dry on the leaves of trees or vines, ordinary rains do not wash it off, and it remains effective for a long period.

Its fineness is such that a thin covering is spread over the leaves and fruit, and once a chewing insect eats even a small portion of the poison, its death is certain.

. . . . .

SOME PRACTICAL HINTS.

Methods of minor detail vary in different districts, but on the whole there are some safe general rules to follow which are published hereunder, and which, whilst known and approved by the older generation of fruitgrowers, will bear repetition for the sake of the younger growers and returned soldier who have taken up fruitgrowing blocks.

(1) A power sprayer is advisable. Use a fine nozzle.

(2) Give the first thorough spraying before the petals fall, two pounds of Swift's Arsenate of Lead to 50 gallons of water.

(3) Spray again within 30 days.

(4) A third spraying may be given within thirty days after the second spraying.

(5) It is advisable as the fruit develops to keep a light coating of Arsenate of Lead on the leaves and fruit to destroy later broods of the codlin moth, also to destroy the light brown Apple Moth which attacks the fruit later than the codlin moth, and which has often been mistaken for the codlin moth. Many experienced growers consider that it is even more harmful than the codlin moth. Fruitgrowers, however, may have complete satisfaction in knowing that Swift's Arsenate of Lead will protect them and keep their developing crops clean.

It may be worth emphasising that the first or calyx spray is the most important. Spray on a calm day with high pressure, driving the Arsenate into the calyx cup of the developing fruit. The necessity or otherwise for this "calyx" spray has been debated, but the concensus of educated opinion, both in America and Australia, is in favour of this highly important method.

Many practical commercial orchardists have found that Swift's is economical, reducing the number of sprayings necessary to keep the trees clean. It is distributed in paste form, mixes readily with water, and owing to its fineness, does not clog the spray pump.

Reduction in Price.

Reductions in duty and the cost of manufacturing have enabled the manufacturer to reduce the price of Swift's Arsenate of Lead. The retail selling price is now 1/3 per lb.

Swift's Arsenate of Lead will be displayed at the Royal Agricultural Show, to be held at Melbourne from 20th to 29th September at the stand of Messrs. D. & W. Chandler.

Supplies are available from the following:—Rocke, Tompsitt & Co., 292-298 Flinders-street, Melbourne (Vic.); D. & W. Chandler Pty. Ltd., 290 Brunswick-street, Fitzroy (Vic.); E. & W. Hackett Ltd., 73 Rundle-street, Adelaide (S.A.); Harris Scarfe and Sandover Ltd., Hay-street, Perth (W.A.); F. W. Heritage & Co., Hobart and Launceston (Tas.); Anderson & Co., 399 George-street, Sydney (N.S.W.); Australian Drug Co. Ltd, 19 O'Connell-street, Sydney (N.S.W.); Holdsworth, Macpherson & Co., George-street, Sydney (N.S.W.); Taylor & Colledge Ltd., Charlotte-street, Brisbane (Qld.).—Advt.

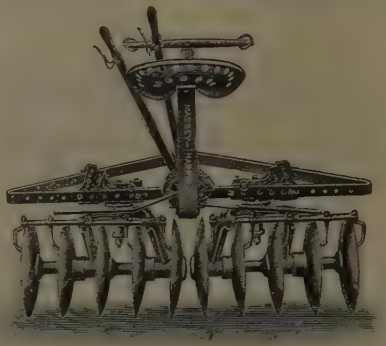
By appointment to His Majesty the King.

Established 1847

Massey-Harris Co. Ltd.

Makers of High-Class Agricultural, Horticultural and Viticultura Machinery

Orchardists will be particularly interested in the undermentioned implements and which form but a small portion of the lines specially suited for the fruitgrower:—



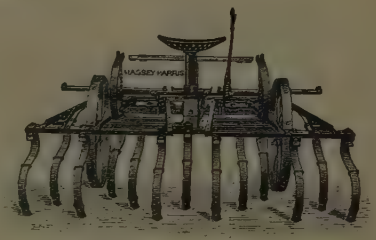
ORCHARD DISC HARROW.

10 Disc Reversible. Can be equipped with Forecarriage or Poles, Trees and Neck Yoke.

If desired, an Extension Frame can be fitted. This enables Gangs to work up to butt of Tree. An extra pair of Discs can also be fitted, making it a 12 Disc Size.

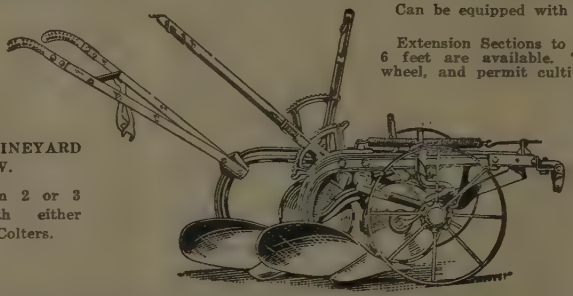
No. 8 NATIONAL GANG PLOW, VINEYARD TYPE.
Can be fitted with Straight Colters.

Note the Land Wheel set inside the Beam, also the short Levers and extra long Clevis.



9-TYNE SPRING TOOTH CULTIVATOR.
Can be equipped with either Forecarriage or Pole, Trees and Neck Yoke.

Extension Sections to increase size to 13-tyne and cultivating 6 feet are available. These attachments work outside each wheel, and permit cultivating up to butts.



No. 9 ORCHARD VINEYARD GANG PLOW.

Can be supplied in 2 or 3 Furrows, and with either Straight or Rolling Colters.

This implement can be converted from 2 to 3 Furrow, or vice versa. Plenty of clearance, dust proof Axles, extra long Clevis.

Inspection is necessary to appreciate fully the many features and all-round superiority of the Massey-Harris Implements. See them at the local Massey-Harris Agency or call when in Melbourne and judge for yourself.

A REQUEST SENT TO—

MASSEY-HARRIS CO. Ltd., 570-576 Bourke St., Melbourne

FOR FULL PARTICULARS WILL BE ANSWERED PROMPTLY.

BRITISH BUILT MASSEY-HARRIS

Spraying Fruit Trees and Vines.

Orchard Pests can be controlled.

Science Aids the Orchardist.

A Review of the Extensive Operations of Messrs. A. Victor Leggo & Co.

SPRAYING is such a vital part of the seasonable work of the fruitgrower that a few hints on the subject will probably be appreciated.

Spraying is a weapon of offence against the orchardists's insect and fungoid foes; it is also an insurance against loss. To obtain clean, bright fruit, effective spraying must be done with the right materials at the right time.

Messrs. A. Victor Leggo & Co. have prepared a valuable range of spraying lines, which have won favour throughout Australia and New Zealand. These include arsenate of lead (paste and powder), lime sulphur wash, nicotine sulphate, dry copper soda, dry Bordeaux, benzole emulsion, petroleum emulsion, atomised sulphur, spray spreader, as well as weed killers and other preparations.

The foregoing are by no means the only activities of this progressive firm, for in addition they prepare many other chemicals used in manufacture. Their works are at Yarraville, near Melbourne, also at Bendigo (Vic.), the mines from which some minerals are drawn are at West Australia, Queensland and N.S.W.

A short description of some of the orchard sprays will be found of interest and value. Same include—

"Vallo" Arsenate of Lead.—(Paste and powder)—of proved value in checking codlin moth, Pear slug, Curculio beetle, caterpillars, borers and all kinds of leaf and fruit-eating insects. "Vallo" Arsenate of Lead is scientifically prepared and accurately balanced, possessing suspension, fineness and adhesion qualities.

Lime Sulphur Wash.—Vallo-Giraffe Lime Sulphur is a valuable remedy against all kinds of scale on deciduous and citrus fruit trees, Oleander scale; also black spot on Apples, Pears and Walnuts; curl leaf on Peaches and Nectarines; shot hole fungus on Apricots; black and green aphis, Peach aphis, mites, mildew, bitter rot, scab, mosses and lichens, as well as Potato and Bean diseases.

Vallo-Giraffe Lime Sulphur is 33 deg. Baume guaranteed and is the highest concentrated lime sulphur wash on the Australasian market, its effectiveness is solely due to the dissolved sulphur contents, as it contains 20 per cent. more dissolved sulphur than brands concentrated to 29 deg. Baume. Thus a saving of 20 per cent. is shown in its use.

"Vallo" Petroleum Emulsion.—The repeated enquiries by growers for a prepared petroleum led to Messrs. A. Victor Leggo & Co. selecting and preparing natural crude oil for commercial use. But before "Vallo" petroleum emulsion was put on the market, numerous tests were carried by prominent growers. On its efficacy being proved against all aphis and scale pests, it was decided to bring the matter prominently before growers. "Vallo" petroleum emulsion is a tested and proved remedy against many of the serious pests which the orchardist has to fight.

"Vallo" Atomised Sulphur.—A distinct advance has been made in the practice of fighting orchard and vineyard pests in the success which has followed the use of atomised sulphur: this is sulphur in an exceedingly fine form, suspended in water. "Vallo" Brand Atomised Sulphur has proved to be a powerful friend of the fruitgrower in combating scab and mildew on Apples and Pears; **brown rot**, scab, mildew and freckle on Peaches and other stone fruits; powdery mildew and red spider on vines, and red spider and mites on citrus trees. Directions for using "Vallo" Atomised Sulphur for brown rot, scab, mildew, and freckle on Peaches and other stone fruits are 10 lbs. atomised sulphur to 100 gallons water.

"Vallo" Nicotine Sulphate.—Messrs. A. Victor Leggo & Co. are the first and only makers in Australia of this product, which is guaranteed to contain 40 per cent. of Nicotine, and is in every way equal in quality to the preparation known as "Black Leaf 40." Nicotine Sulphate can be used with Arsenate of Lead, Lime Sulphur or Oil Emulsion, and can be applied at any time of the year without any danger of scorching.

"Vallo" Spray Spreader.—No matter what spray you use "Vallo" Spray Spreader will make it stick. It will enable you to grow better fruit, because it spreads the spray in a thin film evenly over every surface; its adhesive properties make the spray stick so well that rain has no effect. When arsenates floccolate, they rapidly sink to the bottom of the tank. "Vallo" spray spreader will prevent this curdling; it will also cause Bordeaux Mixture and Lime Sulphur to adhere to the bark of the trees which have recently been sprayed with oil. Write for leaflet.

"Vallo" Benzole Emulsion. — "Vallo" Brand Benzole Emulsion has proved itself to be a valued insecticide, especially in dealing with the Rutherglen bug, aphis, thrip, and various insect pests. It is particularly satisfactory in getting rid of Cabbage aphis, and Tomato weevil.

"Vallo" Dry Bordeaux.—Bordeaux mixture is such a valued orchard spray that it needs no eulogy. Many growers, however, find it difficult to prepare it on the orchard, seeing that the quality with blue stone and lime varies. Separate mixing tubs are needed for the ingredients and unless the correct ingredients are mixed in the correct manner, the result will be worthless. "Vallo" Brand Dried Bordeaux is a scientific fruit spray. The ingredients are present in exact quantities to neutralise each other, and no possibility of free copper sulphate or excessive lime can exist in the final liquor such as not infrequently occurs in the home-made mixture. This Dry Bordeaux is mixed very simply. It can be mixed and made up in any kind of vessel as it has no action on iron or other metal. The dilution is 10 lbs. to 50 gallons of water.

"Vallo" Dry Copper Soda.—Many discussions have raged round the relative advantages of Bordeaux or Burgundy Mixture. The industry, in fact, in this connection, is that Dry Copper Soda or Burgundy Mixture is obtainable in powder form. The directions for use are as follows:—Add the required quantity of water to the powder in a steady stream, stirring the mixture continuously until a fine suspension of the pale blue precipitate takes place; then spray at once.

Dry Copper Soda is the recognised remedy for downy mildew on vines, and it has been proved by Government tests.

Weed, Scrub and Tree Killers.—"Vallo" Brand Weed, Scrub and Tree Killers have proved wonderfully efficacious in eradicating all kinds of noxious vegetation. Remarkable results have been obtained in using "Vallo" on trees, scrub, Blackberries, Sorrel, Couche, Ferns, Briars, Stinkwort, Prickly Pear, etc.

In addition to supplying quantities for commercial orchardists, the various sprays manufactured by Messrs. A. Victor Leggo & Co. are available in smaller quantities for garden use. The firm have been supplying its goods to the Australian public for the last 19 years, and have sheaves of testimonials from grateful clients.

At the Royal Agricultural Show, commencing September 20, their preparations may be inspected at Stand No. 38, Lennon-avenue.

The head office of the firm is at 497-503 Collins-street, Melbourne. Branches are at 7 Hamilton-Street, Sydney, and 239 Elizabeth-street, Brisbane. Their selling agents in Australia and New Zealand are noted in the announcement elsewhere in this issue.

Orchard, Vineyard and Farm Implements

D. HARVEY

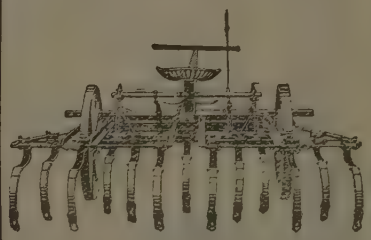
BOX HILL *MELBOURNE*

NO. 10 S.F. GENERAL PURPOSE PLOW. High Steel, Goose-neck Beam, Fixed Handles.

"HARVEY" GOOSE-NECK S.F. PLOW. With shifting or fixed handles. Made in 7, 8, 9 and 10 sizes.

"HARVEY" ORCHARD PLOW.

"HARVEY" 2-FURROW SHIFTING ORCHARD PLOW.



SPRING TOOTH RIDING CULTIVATOR.

"HARVEY" ONE-WAY ORCHARD DISC CULTIVATOR.

4-FURROW POWER LIFT TRACTOR PLOW.

"HARVEY" GRAPE HOE.

"HARVEY" SPRING TOOTH CITRUS & ORCHARD CULTIVATOR.

LIGHT 2-FURROW ORCHARD DISC PLOW.

Office and Works:

D. HARVEY, Box Hill, Melbourne, Vic.

Show Rooms: F. R. Mellor, 440 Elizabeth St., Melbourne

Write for New Illustrated Catalogue

Interstate Fruit Trade.

Apples and Pears in Brisbane.

Valuable Detailed Information.

Of all the duties which fall to the lot of the fruitgrowers' agent, the most important and often the most difficult, is that of giving reliable and prompt advice upon the market conditions, and particularly upon future prospects to the grower (writes Mr. H. V. Geeves, Growers' Agent, Brisbane, Queensland).

The scheme which at present obtains in all the markets of the Commonwealth does not permit of one's knowing the supplies of fruit which are being consigned to any particular city. Thus, we in Brisbane, in advising our growers in other States, can do no more than gauge the supplies which are coming forward, and also we can only gauge the demand of the public.

When one considers the vagaries of weather, and the effect which fluctuations in temperature have on the consumers' taste, it will be seen that careful consideration is most necessary on the part of the agent in advising growers what to send and when to send it.

It must be admitted that in the past, all this advice to the grower has been based on nothing more substantial than that ability to sense rises or falls in market values which agents possess to a varying degree.

An effort has been made in our office to devise some means of founding our market opinions on something more solid than what is, after all, a kind of guesswork. A detailed record of the market fluctuations of all the important varieties handled by us has, and is, being kept, and we are compiling careful statistics which, we believe, will enable us to give sound advice to our growers, based upon the experience and knowledge gained from a close and constant study of the figures and charts we are compiling.

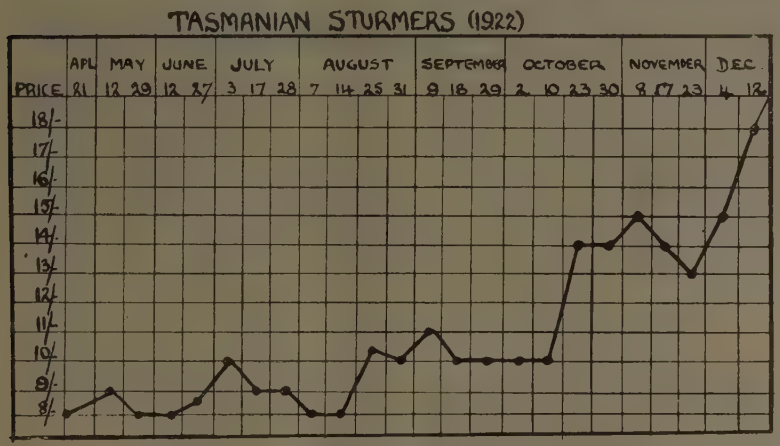
The accompanying graphs, one of the Tasmanian Sturmer, and one of the Harcourt (Victoria) Winter Nelis Pear, each afford valuable information, and it will be the purpose of this article, and those that follow in succeeding issues, to point out the lessons that can be gained from charts of this kind.

It must be remembered that to compile a price graph, care must be taken that accurate figures only are used. If often happens that if the market rate for any particular line is —say, 12/-, a sale may be fluked at 13/-. This is not an uncommon occurrence, but it would be misleading to take the higher figure as the market determination. To avoid errors of this nature we have instituted a card system, upon which we tabulate daily prices for all varieties in which we are interested.

The Tasmanian Sturmer Apple.

An examination of Graph No. 1 the Tasmanian Sturmer) discloses that before October this Apple does not come into its own. Last year this variety did not do as well as usual, particularly in the middle months of the season. The explanation of this fact is (1) Coloured Apples were plentiful, as were French Crabs for cooking purposes, and (2) Many consignments of Sturmers arrived in bruised order, with a consequent depression in both price and demand. Early Sturmers do not pay the grower. This year prices have been better, and a 9/- to 10/- market has been steady during June and July.

Of course, growers cannot always hold their Sturmers till October. Some will not keep that long, but we are confident that many growers market this variety too early. At the same time, we believe that many growers pick them too late.



No. 1. Graph, showing market fluctuations of Tasmanian Sturmer Apples in Brisbane.

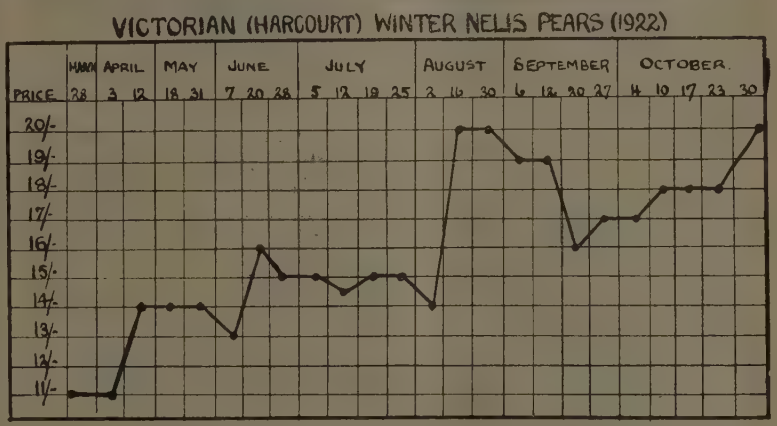
Victorian Winter Nelis Pears.

The Winter Nelis Pear chart is an object lesson in what should be done with this kind of fruit. All those marketed before the middle of June, lost money for the grower. This Pear is a naturally late Pear, and from districts like Harcourt, where there is good freezer space, should not appear in the market till all the early Pears, such as B.D.C., B. Boscs, Gan. Bergamots, etc., are disposed of. Buyers prefer the early varieties when they are obtainable in good order, and it seems a pity to spoil the natural market of the early Pears for forwarding a kind which can be kept.

The above remarks are not offered in any spirit of criticism, nor with any idea of teaching growers their business, but it is felt that the information would be of general interest, and would perhaps help a little to stabilise the market.

We established this system purely for our own use, but we have been requested to give the information publicity, and if growers derive any benefit at all from our efforts in this direction, we are more than repaid.

It is proposed in the next issue to treat in a similar manner, Valencia Late Oranges from Arcadia, New South Wales, and Yapeen Seedlings from Victoria, as a typical example of late coloured Apples from that State.



No. 2. Graph, showing market fluctuations of Winter Nelis Pears in Brisbane from March to October.

WANTED AND FOR SALE ADVERTISEMENTS.

The attention of growers and others desirous of selling or purchasing implements, spray pumps, tractors, cases, wood wool, paper, land; in fact, any item used in connection with the orchard or vineyard, is directed to the special advertising section devoted for this purpose. It is also possible by means of this column to develop a direct trade in fruit as between growers of deciduous, citrus and dried fruits.

For full particulars, see page 338.

WOOD-WOOL

FIRST QUALITY AND AUSTRALIAN
Less than half the cost of Imported.

A Leading Firm of London Importers report on a large shipment of pears packed in trays with our WOOD-WOOL. This consignment certainly travelled well and arrived in very good condition, the wood-wool used in packing appearing quite suitable.

Write for quotations

LAWFORD'S FRUIT EXCHANGE PTY. LTD., DONCASTER, VIC.

(Sole distributors)

New South Wales

MURRUMBIDGEE IRRIGATION AREA.

(By Our Correspondent.)

Research. Mr. A. West, of South Australia, has been appointed by the Irrigation Commission to conduct experiments and research with regard to the many questions of soil, pests, and general agricultural problems more or less peculiar to the Irrigation Areas. Much benefit to the settlers in general is expected from this action.

Navel Oranges.—Oranges in special cases from the Griffith Producers' Co-op. Co. Ltd. topped the Sydney market by 1/6-2/- above the average price. These Oranges were specially selected and graded, and the cases distinguished by an attractive and distinctive label. The management of the company regard this as an added proof of what can be accomplished by careful grading and packing, and by the use of a label or trade mark easily identifiable by the trade.

The Naval Oranges in Griffith, marketed through the Producers' Company on the pool system, are expected to return 5/- per bushel case to the grower. This is an increase of 1/6 to 2/- above the price obtained by individual growers who marketed their fruit privately.

Lemons in N.Z. Bring Record Prices.

A fine example of the value of co-operation is afforded by the Lemon Pool amongst the Lemon growers of Griffith. In previous years the winter crop was mainly lost, owing to unprofitable prices. In May, 1923, a special store was built, giving accommodation for several thousand cases, where they could be stored under the right conditions. The recent epidemic of influenza in New Zealand called for an immediate large supply of Lemons, and the whole of the stored Lemons in Griffith, well cured, and in good condition, were at once shipped away, and sold for record prices.

Red Scale on Citrus.—The growers of citrus fruits in the Leeton Area are considerably exercised at the increase of scale in their orchards, which prevents their exporting, and generally is a handicap in local and home marketing. The position is such that the Commission has been requested to make regulations compelling all growers of citrus infested with red scale, to have their orchards fumigated immediately. A large plant, using hydro-cyanic gas, is available, which will fumigate three to four acres per night at a probable cost of 1/3 per tree.

Yenda.—A new co-operative venture is in process of formation in the soldier settlement of Yenda, to handle the fodder crops grown as "pot boilers" by those settlers whose trees are not yet in bearing. The name of the company is "The Yenda Hay and Grain Producers' Co-operative Co. Ltd."

Cultural Operations.—Owing to unprecedented rainfall throughout the winter months, cultural operations have been delayed. The promise of a spell of fine weather, however, is now enabling the settlers to get right on with their pruning and winter ploughing. Deciduous trees show prospects of a good crop during the coming season, and the orchardists are recommended to prune with care, to ensure good size and quality, especially in canning varieties.

SPRAY SPREADING AGENTS.

Interesting Details.

"Spray Gun," Healesville, Vic., writes:—I read that article in August "Fruit World" on "Spray Spreading Agents" through twice very carefully and with great interest; at the last I was left wondering what the term "alkaline caseinates," "calcium caseinates" really referred to.

I consulted an excellent dictionary, but got no help. I next went to the local chemist, but got no further forward. So, now, Mr. Editor, I come to you. If 50 per cent. of spray material can be saved by the use of "0.2 per cent. of calcium caseinate," and get a better result, I am sure every reader of your valuable journal will have gained something that will be of the greatest service. It is a pity that scientists do not put their scentific knowledge into language less technical when presenting their thoughts to ordinary men.

Kindly let your readers know—(1) What is "calcium caseinate?" (2) Where obtainable? (3) What is the price? (4) State clearly what 0.2 per cent. really means in a spray pump vat.

Answer.—(1) Calcium caseinate is a commercial preparation manufactured for increasing the spreading power and efficiency of sprays. Casein is a product of skim milk, and is used in many manufactures. Casein treated with lime becomes "calcium caseinate," and is in the prepared form ready for use by fruit-growers.

The scientific tests made by our English friends at the E. Malling Experiment Station are full of interest and importance.

(2) and (3) We understand that Messrs. A. Victor Leggo & Co., Collins street, Melbourne, have a similar preparation. Price about 10d. per lb.

(4) The English formula is to use calcium caseinate at the rate of 2 lbs. per 100 gallons of spray fluid. The Australian preparation is recommended at 1lb. per 100 gallons.

Wanted and For Sale

Classified Advertisements.

Advertisements under this heading, which cannot exceed one inch, will be classified as far as possible.

A valuable medium for assisting in the interchange of orchard equipment. If you desire to sell or purchase an implement, pumps, or any other orchard equipment, insert an advertisement in this column. Surplus stocks of cases, paper and other materials can also be disposed of through this column. Advertise your produce to growers in other parts.

Prices are as follows:—

Casual Advertisements, one or three months—9d. per line of six words. Nine lines to the inch.

Contract Advertisements, six or twelve month, 6d. per line of 6 words, 9 lines to the inch.

Send cash with order.

Spray Material

HEMINGWAY'S ARSENATE OF LEAD. Sole Victorian Agent, ESMOND RUSSELL, 60 Queen St., Melbourne.

Books

FRUIT WORLD ANNUAL AND TRADE RECORD, 1923 edition available. 3/- posted—9 Queen Street, Melbourne.

PRUNING FRUIT TREES, By G. Quinn. Illustrated. 4/9 posted—"Fruit World," 9 Queen Street, Melbourne, Vic

Orchards

A BEARING ORANGE GROVE FOR SALE.—22 acres, showing fair crop, best varieties. Average age, 10 years, extra land available, together with all implements, horses, carts, etc., on a walk-in, walk-out basis. A good proposition. Good average rainfall, ideal situation and soil, close to railway, and only 136 miles from Melbourne. Further particulars from "Owner," c/o "Fruit World," Melbourne.

WE BUY LEMONS

Green Citrons and Shaddocks, Seedling Oranges, Tomatoes, Cherries for crystallising, Loganberries, Raspberries and Strawberries, Passion Fruit.

C. M. BROOKE & SON,
Whiteman St., South Melbourne, Vic.

Visitors to the Royal Show are invited to inspect the "Ellisizer," which will be demonstrated at the manufacturers stand No. 207 Peck-street, not Nyora-street, as stated elsewhere in this edition.

NOTICE TO

Fruitgrowers, Vignerons, Farmers!

FRENCH POTASH

Muriate

Sulphate

You are earnestly advised to
Make Sure of Your Requirements of Potash

YOUR SOIL IS HUNGRY FOR POTASH!

Potash is essential to the growth of all cultivated trees, and must be present in all soils capable of supporting vegetable life.

Potash gives richness of flavour, texture and colour to your fruit.

And generally means Quality, which means Price.

Enquiries and Full Particulars from—

Dalgety & Company Ltd.

461-471 Bourke Street, Melbourne.

Sole Agents for the Commonwealth and New Zealand. Apply all Branches.

Answers to Queries.

Sand Drifting : Apricot Gumming : Planting Muscatel Grapes : Weight of Various Sizes of Apples.

"Gummy," Nuriootpa, S.A., asks:—

(1) What is the best way to stop sand drifting in between young trees planted this year without affecting the growth of trees?

(2) What is the cause of full bearing Moorpark Apricot trees dying with gum, and is there any remedy? The trees affected are from six to twenty years old, and are growing in sand, stiff black and clay soils. The gum usually starts in the lower half of the main limbs, and runs down between the bark and wood, and gets right into the butts. It usually kills one limb first and in three or four years the whole tree dies. The trees are growing on a large flat right out of the hills.

(3) Do trees in Victoria suffer with gum?

Answer (by J. Brunning & Sons, Somerville, Vic.).

(1) What is required is a break-wind—hedge, such as beech ti-tree or Lambertiana. Introduction of grasses would soon overrun the soil, and the effect would be disastrous both from cultivation and robbing the soil, standpoints. Should the hedge not grow quickly enough to arrest the drift, try some grain crop on the side whence the drift comes. Crops in the orchard soon rob the soil of its goodness, so we do not advocate planting same in the orchard itself.

(2) We really do not know the cause of Apricots gumming, but have noticed after a long dry spell, then plenty of rain, that the trees gummed more. Perhaps it is excessive flow of sap through the wood cells. Once trees start to gum there isn't much chance of saving them, though to cut through the bark with a knife to the gummy substance within will prolong the life of the tree a year or two longer, and in the end they have to be grubbed out.

Gumming does occur in Victoria.

Answer (by G. W. Peart, Bairnsdale).

(1) Plant a "green" crop, such as Barley, Oats, Millet or Rye on every 5th of 6th "land" throughout the orchard. If the prevailing wind is from west or east, run the crop north and south, if from the north or south, run the crop east and west. On the land where the crop is planted, be careful not to sow within 18 inches of the trees on either side.

(2) The Apricot trees are apparently in trouble with gum owing to bad conditions underground. The stiff black and clay soil would cause this, but the trouble can be counteracted to a good extent by making one or two long cuts with a big knife along each main limb, and in the tree trunk. The gum is really caused by a stoppage or check in the flow of sap. Drain the stiff soil.

(3) Yes, in ground which is not well drained or after an exceptionally wet season on comparatively dry orchard land. The writer has seen Apricot areas of up to 30 acres successfully treated in the manner above described.

Answer (by P. J. Carmody).

(1) If the drift is occurring from the cultivated surface of the orchard itself the texture of the soil requires improving. This can be done by ploughing in a couple of good crops of rye as green manure. The organic matter added to the soil by this means binds the soil particles and prevents their being blown away by winds. A row of Maize or Sorghum sown at right angles to the drift between the rows of trees will, to a considerable extent, arrest the drift.

(2) The gumming of Apricots is probably due to the stocks not being suitable for the soil in which they are growing. On stiff black soils preference should be given to the Cherry Plum stock for Apricots.

Planting Muscatel Grapes.—"H.M." Stanthorpe, asks:—Would you kindly advise me if a block of Muscatel Grapes would thrive on their own, or would they do better if interplanted with other varieties? If so, what varieties should be used?

Answer (by F. de Castella, Victorian Government Viticulturist):—

"Muscatel Grapes (I presume they are Gordo Blanco) usually set their fruit satisfactorily; interpollination is not considered necessary in their case, as it is with several other sorts, notably Bicane or Raisin des Dames and Ohanez.

It is true that in some districts the setting of Gordo Blanco is not altogether satisfactory. It is possible that interpollination might improve matters. This would be assured by planting every third row with a late blossoming variety, such as Waltham Cross or Purple Cornichon.

Weight of Various Sizes of Apples.

In answer to an enquiry re weight of various sizes of Apples, Mr. B. Krone, Victorian Government Orchard Supervisor, writes as follows:

I have weighed from time to time numbers of cases of Apples, and regret to say that I am unable to say what the exact weight of the sizes mentioned would be, as I find the weights vary a good deal, according to the variety, and also the method of packing adopted, or whether the fruit is just filled in.

The following information, however, may be of interest to your reader:—When a good system of packing is faithfully carried out, an average weight for all sizes and varieties would be approx. 43-45 lbs. nett. A case of 2¼ inch Apples weighs more than a case of 3¼ inch, and so on according to the size of the Apples and the variety. For instance, a case of Rokewood weigh more than a

The Difference Between Profit and Loss Lies in Clean Orchards

A New Era in Orchard Sprays

GUMLYPTA ORCHARD SPRAY

The combined insecticide and fumigant that can be used on your trees at any time of the year, and costing less than 3d. per gallon for effective strength.

Destroys Woolly and all Aphis, Red Spider and all Scale Insects, White Louse, White and Pink Wax. We recommend I part Gumlypta to forty parts water for general purposes.

GUMLYPTA ORCHARD SPRAY is Eucalyptus Oil and other insect destroying oils scientifically blended with Carbon Bi-sulphide, etc., so as to mix with water at any strength.
Prevents Fungus growth and Leaf Curl, etc.
Thousands of gallons sold throughout Yanco, Gosford, Wyong, Orange, Richmond (N.S.W.), Mildura, Castlemaine (Vic.), Stanthorpe, Mapleton (Q.), and the Huon (Tasmania).

PRICES:—7/9 per gallon in 4 gallon tins, 8/6 in 1 gallon tins, F.O.B. Sydney.

PAMPHLET AND TESTIMONIALS ON REQUEST.

GILLARD GORDON (Aus.) LTD., Rozelle, N.S.W.

case of Jonathan, and each grade in proportion, also the different grades of Stayman Winesap, Black Ben Davis, and many others weigh lighter than the corresponding grades of London Pippin (Five Crown) or Rokewood.

Sometimes the nett weight of a variety may be 47 lb., but on the other hand, I have heard of complaints from the London market that cases of Jonathans have not held the full weight, viz., 40 lbs. net through not being properly packed.

Dennys, Lascelles
Ltd.

509 COLLINS STREET, MELBOURNE

Head Office and Wool Stores at Geelong.

Exporters of Fruit

to the Oversea and Interstate Markets.

MELBOURNE ROYAL SHOW.

Of Great Educational Value.

Record Attendances Anticipated.

The Annual Show of the Royal Agricultural Society of Victoria will be held at Flemington, Melbourne, from September 20th to 29th, 1923.

This event is eagerly looked forward to by country and city residents alike. The Show is invaluable from the standpoint of educating the city resident as to the value of the country industries.

To the man on the land the value of the Show cannot be over-estimated. So many new and labor-saving devices are exhibited that the Show is of unique educational value to the primary producer.

It is the time when country and city meet together and recognise their mutual interdependence.

Fruitgrowers are keenly interested in the Agricultural Show, and this event is attended by growers from every Australian State and New Zealand.

Growers of summer and autumn fruits are at a difficulty, on account of the Show being held in the spring, to put up sufficiently comprehensive displays worthy of the splendid fruits produced. However, by keeping fruit in cold store some extremely creditable displays are made.

Citrus fruits, however, can be shown in all their perfection: it is pleasing to note the increased prize list for fruits, and the increased interest in competing for same.

* * *

As on previous occasions, many of our advertisers who have exhibits at the Show have taken the opportunity of telling, in a pleasant readable fashion, to our readers in this issue of the "Fruit World," some of the features of the lines in which they are interested.

These literary articles are appreciated by our readers, as by this means a ready grasp is obtained of some of the finer points involved.

Cygnet (Tas.).

"Congratulations on the improvements to the "Fruit World" in the last three years."

(Signed) H. C. CONNOR.

FRUIT TREES

All Leading Varieties

ALL STRONG, HARDY AND WELL GROWN

Apple and Plum Stocks

Write for particulars

THOS. RUSSELL

Alliance Nurseries,

KINGLAKE - VIC

Commonwealth Government Line

FAST PASSENGER AND CARGO SERVICE TO LONDON

Via Adelaide, Fremantle, Colombo and Port Said, transhipping at Colombo for Calcutta, Rangoon, Madras and Bombay : :

VESSELS SAIL AS UNDER :—

	Tons	Brisbane	Sydney	Melbourne	Adelaide	Fremantle
T.S.S. HOBSON'S BAY	13,850	15th Sep.	22nd Sep.	26th Sep.	29th Sep.	4th Oct.
,, ESPERANCE BAY	13,850	6th Oct.	13th Oct.	17th Oct.	20th Oct.	25th Oct.
,, MORETON BAY	13,850	29th ,,	3rd Nov.	7th Nov.	10th Nov.	15th Nov.
,, JERVIS BAY	13,850	1st Dec.	8th Dec.	12th Dec.	15th Dec.	20th Dec.
,, LARGS BAY	13,850	22nd Dec.	29th Dec.	2nd Jan.	5th Jan.	10th Jan.

Taking Wool, General and Frozen Cargo at Lowest Rates.

FOR FULL PARTICULARS APPLY TO—

Commonwealth Government Line, 447-451 Collins St., Melbourne

Branch Offices: SYDNEY, ADELAIDE, BRISBANE

AGENTS AT ALL OTHER AUSTRALASIAN PORTS

DEVELOPING THE BRITISH MARKET.

The Importance of Manchester.

The following comments are forwarded by a correspondent in regard to an article which appeared in the December, 1922, issue of the "Fruit World of Australasia," entitled, "Have we fully developed the market in the United Kingdom?" This question can only be answered in the negative. The bulk of fresh fruit export from Australia and Tasmania is concentrated on London, but how much of that fruit is consumed within say, a 50-mile radius of London, and what proportion of the total import is put on rail to supply the densely populated industrial centres of the Midlands and Northern Counties of England? Doubtless this information would make interesting reading if it were available.

There are many factors to be taken into consideration, but has any serious attempt yet been made to even estimate the quantities of fruit which could be safely sent to each of the out-ports of Britain without affecting the London sales?

Very large quantities of Australian fruit ultimately find a market in the Midlands of England and the densely populated cities and towns of Lancashire and Yorkshire. Are these areas served in the most economical way possible? Growers and shippers at this end may think this is no concern of theirs, because the cost of transport and distribution after discharge of the fruit at a British port does not fall on them. There could be no greater fallacy!

The British consumer buys overseas produce at its face value in competition with other produce, irrespective of whether unnecessary transport charges have been incurred in bringing it to his area or otherwise. Now assume the original importer purchased such goods, say, c.i.f. London, he must of necessity have allowed sufficient margin in his purchase price to enable him to pay transport charges to the consuming area, or on the other hand—if the produce was consigned to him for sale on commission—although the cost of forwarding to distant areas may not appear in the account sales, it is inevitably included. Therefore, however it may be disguised, the cost of forwarding fruit from unnecessarily distant ports of discharge to the consuming centres, inevitably sifts back and falls on the shipper and grower. How long will Australian and New Zealand fruitgrowers and shippers be content to continue paying the piper and allowing other interests to call the tune?

Cut the Cost! Surely no slogan is more freely uttered throughout the world to-day. The nations are engaged in a strenuous race for trade supremacy, and the inevitable corollary is a pitch of competition which may be difficult to appreciate. The race goes to the swiftest; and pride of place in production, both individually and collectively, pass to those presenting the fruits of their labour before the customers of the world at the most favourable figure.

Australasian fruitgrowers and shippers should "cut the cost" by insisting that their fruit be placed in the most direct and economical way on the markets, where there is a demand for that fruit.

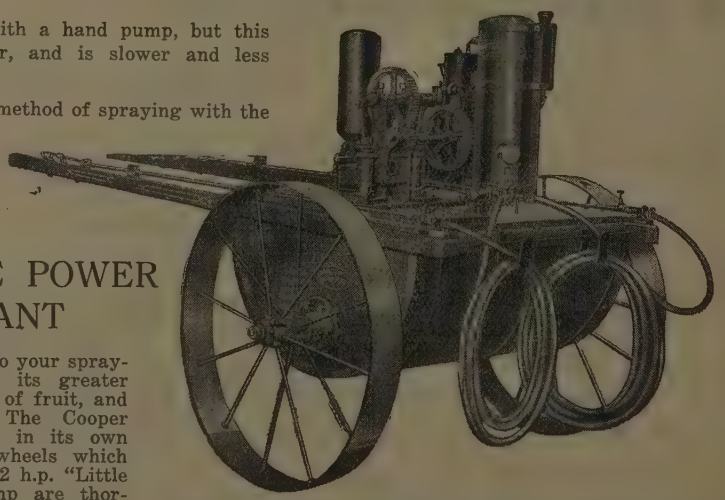
As an instance of one of the great out-ports of England, where there are vast possibilities for the marketing and distribution of Australian fruit, let us consider Manchester, which has been very aptly termed, "the valve at the heart of England's greatest industrial area."

Some people say that the Romans played an unkind trick by choosing the site for Manchester so far from the sea-board. Fortunately commerce cannot be prevented from finding its own level. Its search for the short, cheap, quick cut cannot be thwarted, and therefore a waterway was constructed known as the Manchester Ship Canal, thus bringing the sea to the doors of Manchester at a cost of £18,000,000, but it was cheap at the price. By provision of the Manches-

TWO WAYS OF KILLING PESTS

There is the method of spraying with a hand pump, but this involves hard work for the operator, and is slower and less efficient than

The up-to-date quick and effective method of spraying with the



Cooper

PERFECT BALANCE POWER SPRAYING PLANT

The Cooper method enables you to do your spraying at the smallest labour cost; its greater effectiveness saves you many cases of fruit, and conserves your spray mixture. The Cooper Plant is perfectly balanced, turns in its own length, and is fitted with large wheels which prevent bogging and shaking. Its 2 h.p. "Little Wonder" Engine and Duplex Pump are thoroughly reliable, and maintain a strong steady pressure of spray mixture.

Write to-night for full Particulars.

COOPER ENGINEERING CO. LTD.

350 Spencer St., Melbourne

ter Ship Canal, steamers of 13,500 tons, many of which are engaged in the Australian trade, can pour out their cargoes direct into the city of Manchester, forty miles from the sea!

Sir George Fuller, Prime Minister of New South Wales, paid a visit to Manchester during his recent tour of England, and the following are some of the impressions he communicated to a representative of the "Manchester Guardian" at the close of his visit:—

"You are situated in the heart of a densely populated region, offering a wonderful market for our Dominion products, and an admirable basis for mutual trade. You have provided very great facilities for cold storage, and have wisely provided for expansion. To a coming country like Australia, exporting fruit, butter, cheese, bacon, eggs, rabbits, vegetables, and other perishable produce, your cold stores should act as a powerful magnet in attracting Australian trade through your port. I notice with pleasure that a revised scale of reduced charges has been issued, because the intermediate costs between the producer and the consumer should be reduced to a minimum. But these storages would not adequately serve their purpose if it were not for the wonderful transport system which has been provided—the miles of docks, each provided with electric cranes of great capacity, the grain conveyors, and the excellent railway connections to the chief towns of Britain. It is no wonder that you rank as fourth port of the Kingdom in the volume of traffic handled. I did regret to-day that beyond a few Victorian lambs, I saw no foodstuffs of Australian production in your stores. This should not be. We are a great producing country — able, single-handed, to supply the British market with immense quantities of fruit, butter, cheese, etc. Now that I have visited Manchester and seen for myself its importance as a port and distributing centre, I hope to be instrumental in securing for Manchester a fair share of Australian trade commensurate with your undeniable opportunities for the distribution of our products."

Sir George Fuller's visit to Manchester took place during April last at a time when shiploads of Australian fruit were arriving in London, and yet, he was compelled to remark that the stores at Manchester were practically void of Australian produce. During last fruit exporting season, six steamers fitted for fruit carrying, cleared from Australian ports for Manchester but one only of this number carried fruit for that port. After discharge, the fruit by this steamer was sold in the fruit auction rooms, little more than a mile from the docks, and it is a noteworthy fact that the average price realised per case for the shipment, constituted one of the best sales of the season in the United Kingdom.

Manchester can absorb very large quantities of Australian fresh fruit, and yet the other five steamers abovementioned, carried no fruit for discharge in that city.

Is this developing the British market to the fullest extent?

CLIMAX FRUIT CASE.

In a paragraph published in our last edition regarding the "Climax" fruit case, we stated that the insulators were made of wood 1in. in diameter and ⅛in. deep. This was not correct, as the insulators are made of millboard or other suitable material three-quarters of an inch in diameter, and ⅛in. deep. These insulators are placed in suitable positions on the sides, top and bottom of each case, and are fixed simultaneously with the construction of the case, thus making the case self-isolating and allowing a current of air to pass all round the cases. The insulators being made of millboard, will not crack, split or knock off. Brown Heart, Bitter Pit and Scald are due to lack of ventilation. This case, being fully isolated from grower to consumer, should prevent these evils, and land the fruit in the best possible condition, so commanding better average prices.

Port of Manchester

The inland Port nearest to the World's Greatest Industrial Centre and to 10 million consumers and users of every variety of Primary Produce; modern Port and Dock equipment, including refrigerated transit warehouses; Direct Railway Communication with every berth; Markets near the Docks.

Population within various radii of the Ports of Bristol, Hull, London and Manchester:—

MILES RADIUS.	BRISTOL.	HULL.	LONDON.	MANCHESTER.
25	1,063,662	598,934	8,292,767	4,035,360
50	3,255,376	2,388,382	10,320,856	9,863,470
75	6,074,284	5,353,568	13,131,319	14,106,422

Ensure minimum handling, transport and distributing charges by shipping via the most direct route from Producer to Consumer.

Information as to Port and Forwarding Charges, Steamship Services, Merchants and Importers, etc., on application to the representative of the Manchester Ship Canal Company for Australia and New Zealand:—

CAPTAIN W. J. WADE

8 BRIDGE STREET - - - SYDNEY, N.S.W.

Poultry Notes.

(Conducted by Ian P. Hamilton.)

MAKING POULTRY PAY.

If any doubt still exists as to whether poultry breeding in Australia can be made to pay, it is dispelled by a visit to one of those large up-to-date farms—and there are many of them scattered throughout the Commonwealth, where the industry is being profitably carried on under modern conditions and on up-to-date lines.

Three years ago a prominent member of the Poultry Club of England —Mr. W. J. Coxhead—decided to try his fortune in Australia, and realising the possibilities of the egg and day old chick trade in the Commonwealth, laid the foundation of what is to-day the Southgate Poultry Farm —regarded as one of the best equipped and most up-to-date in Australia. Selecting 50 acres of fertile land at Carrum (Victoria) he has built up in three years a flock of 1,200 laying hens, has erected a 1,000 feet of sheds, and put forty acres under crop.

The incubator room, made of cement bricks manufactured on the premises, contains a mammoth Sentinal machine with a capacity of 2,600 eggs. Hot water pipes automatically regulated by a cut off valve circulate through, and heat the machine, which is divided into self-contained compartments and hatching every three days. A cobe-fed boiler supplies the heat and the hatching cost is only 4/- a week. A well-lighted and ventilated brooder room, opening on to grass runs, accommodates nine hundred chicks. There are sixty ideally situated breeding pens, flock mating and laying sheds to hold twelve hundred birds, and at the end of this year this accommodation will be increased to give the farm a capacity of 3,500 birds. So great is the demand for chicks and eggs that Mr. Coxhead is experiencing difficulty in hatching sufficient for his own requirements, and at present has 4,000 day-old chicks on sale. It all goes to show what can be done if knowledge, method, and science are properly harnessed. There is money, and good money, too, in poultry breeding in many parts of Australia, and orchardists can—in a smaller way—supplement their incomes by the establishment of a select flock of layers.

POINTS ON INCUBATING.

Now that the hatching season is in full swing, a few points on the management of an incubator, as supplied by the N.S.W. Government Poultry Expert (Mr. J. Hadlington) should be of interest.

* * *

See that the incubator is in good sanitary condition. Test all thermometers at intervals throughout the season. It does not follow that because a thermometer is true one season it will remain so. The instruments are likely to get out of order, hence the necessity for frequent testings. The safest plan is to procure a tested thermometer with which to compare the others.

When starting an incubator, the temperature should be got up to and maintained at 103 degrees for at least twelve hours before the eggs are put in. When the eggs are in the temperature will fall, and it is best to allow about another twelve hours for the heat to rise gradually to 102, at which point the incubator should be regulated to run steady. It is a mistake to raise the temperature too fast. If a lamp machine is used the lamp should be kept quite clean, and the wick free from incrustation. Fresh eggs under a week old, and from physically strong stock, are necessary to ensure successful hatching. The heat should be raised another degree as the hatch progresses. When the first egg is seen to be chipped let the temperature run up to 104 or 105 degrees till the hatch is finished. For these temperatures the bulb of the thermometer should stand just clear of the eggs.

* * *

Begin to turn them when they have been in the machine 36 hours, and turn twice daily up to the 9th day. Once a day afterwards is all that is absolutely necessary. Each time the eggs are turned move the relative position from middle to side and vice versa. Stop turning when the first egg is seen to be chipped. The eggs should be tested about the seventh day. At that time even a novice can generally pick out the infertile eggs with a good tester. Commence cooling the eggs for a few minutes once a day after the sixth day, and gradually increase the time of cooling as the hatch progresses, first to ten, then up to fifteen, twenty and even thirty minutes, according to the temperature of the room. Put eggs should not be cooled for thirty minutes as a regular thing, or too often. Cooling should be stopped when the first egg is chipped. Little, if any, ventilation is required up to the time of commencing to cool, about the sixth day. A gradual amount of ventilation may then be allowed up to the time the first egg is chipped, when the ventilators are better nearly closed. Most incubators are overventilated. Experience proves that applied moisture is unnecessary, and in many cases harmful, and most large operators dispense with it altogether.

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Bee-Keeping.

Making a Start.

The first consideration, and one that is going to play an important part in subsequent operations is the selection of a suitable range for the hives. A bee site should be well furnished with an abundance of the right kind of trees, shrubs and flowering plants. Early flowering flora is specially desirable, so that the bees will be able to breed up to their maximum strength at the beginning of the honey flow. The apiary can best be stocked in the first place by buying the required number of hives from a reputable bee-keeper. An opportunity is often afforded to purchase established colonies at the end of the season, and with proper attention these may be increased by fully 100 per cent in the spring and summer. Good swarms of wild black bees, secured early in the season, and given a young Hoban queen at once, are nearly as valuable as swarms of Italian bees. The black bees should be supplied with Italian queens before winter. A small number of colonies well worked will return a larger crop of honey than a larger one poorly worked.

AREAS PROCLAIMED.

At the recent Apiculturist's Conference at Ararat the indiscriminate removal of apiaries in districts where the industry receives special attention was said to be the cause of the spread of foul brood and other diseases. Opinion pointed to the fact that departmental action was necessary to prevent transferences unless clean certificates were issued by the officer appointed to make the necessary examination. As a result a proclamation has been gazetted, under the Bees Act 1915 with respect to the districts of Stawell Borough and Shire, and Shires of Dimboola, Mount Rouse and Ripon. In future it will be an offence to bring bees into those areas from other localities, to remove existing apiaries from the positions which they have occupied, or transfer honey-comb. hives and appliances without official authority. Application permits may be obtained from the Chief Veterinary Inspector (Mr. W. A. N. Robertson), Dept. of Agriculture. Melbourne. The proclamation will be extended to other municipalities as the necessity arises.

Some interesting statistical information concerning bee-keeping was brought forward at the Conference of the Victorian Apiarists Association, held at Ararat at the end of June. This disclosed the fact that there were 4,046 bee-keepers in Victoria with 50,147 hives, from which 2,712,675 lbs. of honey was gathered, and 32,737 lbs. of beeswax was made. There were 41,593 frame hives, and 8,554 box hives.

Latest figures showed that during the season 1920-21 the production of honey in Australia totalled 5,651,143 lbs. from 122,041 hives, the greatest number having been in Victoria.

Fordson tractors are proving themselves as adaptable in an emergency as the Ford car.

At Gilgandra, N.S.W., the power station was burnt down, and the town was plunged into darkness until the loan of a Fordson was offered by an up-to-date farmer.

Contrary to the opinion of the local experts the Fordson drove the heavy plant for seven weeks, while rebuilding was carried on, and enabled the usual lighting to be supplied. Only once a short halt was made, this being to drive an X-Ray outfit to enable a doctor to make an examination, and thereby save a man's life.

"WHAT'S WRONG WITH YOUR STOMACH?"

No man or woman should have Indigestion or suffer from constipation or liver troubles. If the food you eat disagrees with you, all that you require is certain herbal juices to stimulate the digestive process. The ancient Egyptians understood this when they ate a small herbal decoction after every meal—and they were gross feeders! A.M.S. has been scientifically compounded from herbs to help the stomach and liver do their work effectively. Try a little every day, and you will soon abandon medicine altogether as thousands of people have already done. All chemists 3/-, or by post 3/6 a bottle from T. A. Dickson, Chemist, Geelong, Vic.

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157 Queen Street, MELBOURNE, AUSTRALIA.

Trade with Hull

Mr. J. F. Kruger (White & Son Ltd.) Receives a "Welcome Home."

"Successful Trade Ambassador."

A banquet, attended by the principal commercial interests of Hull, England, was tendered to Mr. J. F. Kruger, of Messrs. White & Son Ltd., Hull, during June.

Mr. A. J. Peacock presided. Cordial references were made by various speakers to Mr. Kruger as Hull's most successful trade ambassador. The speakers included Colonel Lambert White, C.B., Col. Jas. Walker, Messrs. J. A. Wilberg, E. S. Brocklehurst, H. Seed, J.P., G. H. Pattison, W. Hancock, and W. Simpson.

Mr. Kruger was presented by the fruit buyers with a mounted walking stick and a case of pipes.

Replying, Mr. Kruger stated he had always advocated the claims of Hull as a port; previously some shippers seemed to thing that all that was necessary was to use the ports of London and Southampton, but he had dispossessed their minds of that idea; steamers now came direct to Hull from the overseas Dominions as a result of the trade stimulus. Fruitgrowers could bring pressure to bear to increase direct shipping to Hull.

The proceedings were very cordial, and concluded with singing "Auld Lang Syne," and the National Anthem.

THE OLDEST APPLE TREE.

What is believed to be the largest and oldest Apple tree in the world is located in Patrick County, Va., about six miles from Stuart, writes Mr. Frederick I. Bartlett, in the "American Fruitgrower." The tree is 120 years old, 12 feet in circumference at the trunk, 60 feet high, 70 feet spread of branches, and has a record of 123 bushels of Apples gathered in one season.

The commercial Apple belt of Virginia is one of the finest in the world, and this record tree is one of the outstanding features of the orcharding interests in that section of the State. The largest Winesap Apples ever grown were raised on the Stuart orchard. The Apples were 13 inches in circumference, and are modelled in wax in the United States Department of Agriculture. On this farm in 1914, 33 barrels of Apples were gathered from one tree after a severe storm had blown off many bushels. A number of other farms have trees that have borne 25 barrels each.

The oldest Apple orchard in the United States is the Taylor orchard, eight miles east of Stuart. The orchard is almost 100 years old, and in many instances individual trees have borne 100 bushels of Apples in one season. One tree adjoining the Atwood orchard bore 175 bushels in one year, and in two successive years an aggregate of 238 bushels.

SEEDLESS APPLE.

Apples without cores or seeds are promised by a discovery announced at Abbotsford, Canada, the particulars of which have just been received by the Department of Commerce from Consul General Halstead. According to the announcement a seedless and coreless variety of Fameuse Apple has been developed, which differs but slightly in shape from an ordinary Fameuse by being longer and flatter at the ends, but with the typical coloring and flavor.

Except for a slight marking on the flesh which outlines the situation of the core in an ordinary Apple, there are neither core nor seeds. The Apples were developed in an orchard at Abbotsford, and the discovery that they were out of the ordinary was an accident. They had come from a new block of Fameuse, about eight years old, bearing for the first time in market quantities, which had been top grafted on Rabka seedlings. The discovery was made while grading for market, but unfortunately no record was kept of the tree or trees producing the new fruit and it will not be before another harvest that steps can be taken for its commercial development. — "American Fruitgrower."

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Every Firm should be Officially Represented

if only by a line or two—Our Readers are Your Clients. It is an able and wise introduction, and when you go through the fruit districts our Readers will have already known you through us.
It pays best to send Consignments Regularly — Not Occasionally — to the best markets, by doing so you strike the rising and falling markets and make a fair average for the season.

A ten times wider and better distribution will ensure a ten times greater production, at more payable returns. It is large and valuable exports from settled industries that make a nation prosperous.—Ed. "F.W."

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British and Australasian Market Reports

Great Britain.

London (31/7/23).

South Australian Oranges per the s.s. "Esperance Bay" have been unloaded in excellent condition, Covent Garden salesmen stating that they consider them to be equal to the best shipments ever landed. The fruit is selling at from 20/- to 25/- a case. The price would probably have been much higher if the dockers' strike had not delayed the discharge of the Oranges from the vessel.

The market is now receiving large supplies of South African Oranges and of Continental Plums and other soft fruits.

London (22/8/23).

Oranges per the s.s. "Barrabool" have been discharged in very fair condition, considering that the landing of the cargo has been delayed for five weeks owing to the strike by the dockers. West Australian consignments are selling at from 15/- to 20/- a case.

Some of the cargo sent by the s.s. "Moreton Bay" is turning out to be unsatisfactory, and a portion of the West Australian shipment has been condemned. Further sales of Oranges from that state are realising from 14/6 to 16/- a case, and some very wasty lots 8/- to 9/- a case. Very wasty fruit from New South Wales is bringing about 9/- and 10/- a case. Victorian sound Oranges are being marketed at from 16/- to 20/- a case, with a few selling at 22/-, while some wasty lots are being placed at from 12/6 to 15/- a case.

Covent Garden (14/7/23).

The following are the prices ruling at Covent Garden Market, as published in the Fruit, Flower and Vegetable Trades' Journal, 14/8/23:—

Apples, Tasmanian Scarlet Pearmain, 15/- to 16/- per case; Munro's, 16/-; Dunn's, 16/-; London Pippin, 15/- Sturmer, 15/- to 16/-; Rome's, 15/- to 16/-; New Zealand Statesman, 16/6 to 17/6; Rokewood 16/6 to 17/6; Doherty, Golden Russett, to 17/-; Jonathan, to 18/-; Newtown Pippin, to 21/-; Cox's O.P., to 40/-; Apricots, 10/- to 12/- per crate; Bananas, Fyffe, 11/- to 20/-; Hoya, 26/- to 30/-; Cherries, 10/- to 24/- per ½ sieve; Figs, 15/- to 21/- for specials, per doz; Grapes, Alicante, 2/- to 3/-; Muscat, 2/6 to 6/- per lb.; Lemons, 300's, 17/- to 20/- per case;

New South Wales.

Mr. F. Chilton, City Fruit Markets, Sydney, reports under date 27/8/23: —Queensland Fruits—Pines, Smooths (colored), 5/- to 8/- per case; Tomatoes, 5/- to 9/- per half-case. New South Wales Fruits—Bananas (Tweed River) 18/- to 30/- per case; Oranges, 3/- to 8/- per bushel case; Navel Oranges, 8/- to 13/-; Mandarins, 6/- to 12/6; Lemons, 4/- to 8/-; Apples, Granny Smith, 9/- to 14/-; Passions, 5/- to 11/- per half case.

N.B.—Prices for the above are quoted exclusive of case. Victorian Fruits—Pears, W.C., 10/- to 13/- per bushel case. Tasmanian Fruits—Apples, Crofton, 7/- to 12/- per bushel case; S.P.M., 4/- to 11/-; S.T.P., 4/6 to 7/6; F.C., 5/- to 8/-; DEM. (Tasma), 8/- to 13/-; Pears, Jos., 6/- to 8/6 per half case.

The demand is very fair for all lines of good quality but small and inferior grades are hard to dispose of even at low prices.

The weather recently has been cold and wet, and has had a depressing effect on the trade. An improvement all round is expected as soon as finer and warmer weather sets in.

Victoria.

Melbourne (30/8/23).

The Wholesale Fruit Merchants' Association of Victoria reports market prices as follows:—

Oranges (S.Aust. Navels), 12/- to 16/-; Victorian Navels, 10/- to 14/-; extra large fruit at lower rates. Commons (N.S.W.), 9/- to 11/-; Mandarins (best), 13/- to 16/-; small fruit at lower prices.

Lemons, 7/6 to 9/-.

Large supplies of good quality fruit are arriving from New South Wales.

Enquiries are being made for Poorman Oranges.

Apples (best eating), 2¾in., 11/6; 2½in., 10/-; 2¼in., 7/- to 8/-; good cooking, 6/- to 8/6. Tasmanian cookers, 6/- to 7/6.

Pineapples, 8/- to 10/- per double case.

Bananas, 20/- to 28/- per double case.

Passion-fruit, choice, 24/-; small and inferior, 12/- per bushel.

Citrus Notes.—The V.C.C.A. Market Representative reports as follows for the week ending August 25th:—

"The weather during the last week

has been the best experienced during the whole marketing period to date. Large supplies of fruit have arrived from every quarter. particularly from the Sydney side. The quality of this fruit, excepting a few noted brands, was very poor. Agents are experiencing great difficultv in disposing of small and badly marked Mandarins. When large quantities of this class of fruit arrive, the prices of better qualities are affected to the extent of fully 3/- per case. Good Oranges in every class are selling freely. The demand for Lemons is very dull.

Prices.—Navels, Choice South Australians, 10/- to 15/-; local 1/- less (52's to 60's verv hard to sell); commons (good), 8/- to 12/-; Mandarins (best), 11/- to 14/-; (small unsaleable); Lemons, 6/- to 7/6."

Victorian Lemons in New Zealand.

Bendigo (28/8/23).

Mr. R. K. Roberts, of Riverside, Kerang, last month despatched for sale in Dunedin (N.Z.) 44 cases of Lemons. The fruit arrived in good condition, and sold from 30/3 to 34/6 per case, the gross returns being £1/7/3¾ per case.

When freight, duty, insurance, and shipping charges were deducted, the net return worked out at 17/1⅛ per case, more than double the price at which the Lemons were selling on the local market.

Cooksley & Co.

(W. P. COOKSLEY)

Reliable Fruit Agents

22 Years' Experience

TRY THEM!

Fruit Exchange, Brisbane

QUEENSLAND.

Shipping No. 29

Reference: Commercial Banking Co. of Sydney Ltd.

Queensland.

Brisbane (25/8/23).

Oranges, North Coast Valencia, 13/- per bushel case; others, 9/- to 10/6; Navel Oranges, 15/- to 17/-; medium, 12/- to 14/-; Mandarins, extra choice, 16/- to 18/-; good, medium, 12/- to 13/-; medium, 9/- to 10/-; small, 3/- to 4/-; Lemons, 10/- to 12/-; locals, 2/- to 4/6 per ½ bushel case; South Australian, 12/- to 14/- per bushel case; Strawberries, good, 10/- to 12/-; others, 6/- to 8/- per doz. boxes; Bananas, 4/- to 13/6; Cavendish, special, 9½d.; prime, 6d. to 8½d.; Ladies' Fingers, 1½d. to 6½d.; sugar, 2d. to 6¾d.; Pines, Ripley, Queens, 2d. to 2/6 per doz.; Papaws, 2/- to 3/- per bushel case; Custard Apples, special, 4/- to 5/- per ½ bushel case; large trays, 3/- to 5/6; small, 2/- to 3/-.

South Australia.

Adelaide (25/8/23).

Apples, eating, 11/- to 14/- per bushel case; cooking, 10/- to 12/-; Bananas, Queensland, 28/- to 30/-; Lemons, 5/-; Oranges, 6/- to 7/-; Mandarins, 16/-; Navels, 13/-; Poorman, 4/-; Passion-fruit, 34/-; Pineapples, 14/- to 15/-.

Edward Jacobs & Sons

Covent Garden Market

LONDON, England

Solicits Consignments of Australian Fruit.

Tasmanian Representative:

W. D. Peacock & Co. Ltd

PRINCES WHARF, HOBART

Shipping Number 418.

Western Australia.

Perth (23/8/23).

Apples—Yates, 11/- to 13/-; medium, 7/- to 9/-; small, to 5/-; Doherty, to 9/-; Granny Smith, best, 10/- to 14/-; others 8/6 to 9/6; Cleos., 8/6 to 10/-; others, to 7/-; Dunn's, best, 8/- to 9/6; others, to 7/-; Rokewoods, to 8/-; Delicious, to 9/6; Nickajacks, to 9/6; Keiffer Pears, dumps, to 13/9; Beurre, to 5/-; Navels, dumps, best, 9/- to 11/-; good, 6/6 to 7/6; others, to 5/6; flats, best, 7/- to 8/6; others, to 5/-; Oranges, to 3/3; Mandarin, special, 10/3; good, 6/- to 8/9; small, to 4/-; Lemons, 2/6; Passions, flats, to 22/-.

Tasmania.

Hobart (18/8/23).

Apples, S.P.M., best, 6/- to 6/10 per bushel case; medium, 5/- to 5/10; small, clean, 3/6 to 4/6; Jon., fair, to 4/6; S.T.P. best, 5/- to 5/8; medium, 4/3 to 4/9; small, clean, 2/6 to 3/-; R.B., medium, to 4/9; others, small and spotty, 1/- to 2/6.

New Zealand.

Dunedin (9/8/23).

Messrs. Thos. Paterson & Co. report as follows:—The "Moeraki" brought between 4,000 and 5,000 cases of citrus fruits. The majority of these were Navels, and this quantity caused a glut on the market. Some of the fruit was carried below decks, and the results were somewhat disastrous. We would warn shippers against shipping fruit otherwise than on deck. Some of the consignments carried below had to be repacked, and the loss was considerable.

Prime Navels realised 18/- to 21/-, repacks from 15/- to 20/-. Lemons arrived to a good market, and realised from 26/- to 28/- per case. We do not expect heavy consignments by the next "Moeraki," and probably prices will improve. A small parcel of Mandarins arrived, and were of exceptionally fine quality. We advise further consignments of Mandarins from Melbourne. Pines are in very short supply at present, and are realising from 22/- to 24/- per case. We advise shippers and growers to see that the Pineapples are shipped well coloured, as it is difficult to sell these in green condition."

Growers and Shippers of Australian Fruits

MANDARINS, POORMAN ORANGES, SEVILLES,
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Will find it to their advantage to ship their fruits direct to

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